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HAPPINESS FREEDOM AND GOD

By the Same Author

SPIRITUAL PLURALISM AND RECENT PHILOSOPHY

THE SUPREMACY OF SPIRIT

PLURALISM (*Encyclopædia Britannica*, Fourteenth Edition)

METHODS AND EXPERIMENTS IN MENTAL TESTS

With C. W. Stokes

THE GROWTH AND VARIABILITY OF INTELLIGENCE

Happiness Freedom and God

by

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Preface

RATHER MORE THAN TWENTY YEARS AGO I WROTE A BOOK ON *Spiritual Pluralism*. As its title implied, it was mainly concerned with the development of a metaphysical theory of reality as a community of spirits, a theory of a kind which was first given really systematic expression in the philosophy of Leibniz, and which was, at a more recent date, expanded and, in certain important respects, modified by Lotze in Germany and James Ward in this country.

I have seen no reason meanwhile to change in any substantial way the views which I then expressed. But I indicated in my book that I shared the opinion of the philosophers I have mentioned that a metaphysical pluralism is, by itself, incomplete, and must be supplemented by a metaphysic concerned with the unity manifested in reality. I had hoped to write another book dealing with the latter after a short interval, but pressure of other work and other interests intervened, and I have only now been able to accomplish this.

The present volume, being concerned with the principle of unity in the world, deals mainly with topics relating to values and morals, and the existence and nature of God. It traverses ground which is being continually and thoroughly explored, and in which, by the very nature of the case, one gets very quickly down to bedrock. I hope, however, there may be some elements of novelty in the way in which the various topics are approached and presented, and in the view which I put forward regarding the moral law and moral responsibility.

Some of the suggestions which I offer for consideration, both in the ethical and in the metaphysical fields, are no doubt rather unusual, and I have not hesitated here and there to supplement reasoning by a certain amount of speculation. But I do not feel it necessary to apologize for this at a time when long-established modes of thought are continually breaking down and re-forming into new patterns, and ideas—especially in the scientific field—which not so long ago would have been regarded as ridiculous or fantastic, are now accepted as a matter of course.

I should, perhaps, make special reference here to the section in Chapter III dealing with Time, Causality, and Probability. I have there presented a theory which, though suggested by certain current developments in physical science, is, I think, essentially new. In its general principle it is very relevant to the main argument of the book, but my illustration of it by application to the field of physical science is something of a digression, and the general principle in no way stands or falls by it. I wish to put forward this particular application to physics in a purely tentative way. While I feel fairly confident that it is something like the truth, I am not yet sure how like. But, so far as there may be anything in it, I think it might perhaps prove a quite fruitful idea for the purposes of philosophy of science and the relation of the latter to metaphysics. In view of the nature of the topics with which it deals, the material of this section, and the mode of exposition, will no doubt appear to be in somewhat startling contrast to the rest of the book. But, having regard to the marked effects which, rightly or wrongly, recent developments in physics and in the philosophy of physical science have had on metaphysics in general, and on epistemology and theory of knowledge in particular, I have thought it well to retain the section in question in the main body of the text rather than to relegate it to an Appendix. But, as it is somewhat technical in character, I have set out the gist of it in an Appendix in a much simpler and less technical form, sufficient to maintain the general continuity of the argument, for readers whose inclinations are not mathematical and who may therefore prefer to skip the detailed development in the main text.

It has been my aim to present the statement of my theories (or beliefs) in as short and concise a form as possible, without unduly labouring detailed analytical arguments. I feel that philosophers may have tended to emphasize the latter too much, and to underestimate the importance of ideas and beliefs which, though rather vaguely and ambiguously defined, so far as verbal expression is concerned, are derived immediately from experience and have a pretty definite practical significance for everybody. An additional reason for what might at first sight appear an unwarranted brevity in treating of high matters (though I do not think it is really unwarranted) is the fact,

already mentioned, that in discussing these one very quickly reaches ultimate issues which are matters of opinion or faith, and not of further argument. But I would ask that judgment on what is written in any part of the book should be suspended till the whole has been read.

My grateful thanks are due to Dr Abraham Wolf, not only for reading my manuscript, but for his subsequent encouragement and helpful suggestions; and to Dr Godfrey Thomson, who read the special section in Chapter III, to which I have already referred, and felt able to assure me that he thought it deserved serious consideration.

The number of philosophers and others whose writings have influenced me in forming the views set out in this book is too great for detailed acknowledgments to be possible. But, so far as the philosophy of physical science is involved in portions of what I have written, I should like to express special appreciation of the suggestive ideas contained in the various works of Sir Arthur Eddington.

I realize that the acid test of a philosophy is the effectiveness of its detailed application to life, and it is rightly judged by such a test. As this question is, for the most part, beyond the scope of the present book I have tried, since completing it, to show the application of my main thesis to the various aspects of life—religious, political, social, and personal—in a book entitled *Strategy of Living*.

C. A. R.

January 1944

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CHAPTER I

The Inquiry

INQUIRY INTO THE NATURE OF THE UNIVERSE HAS BEEN TRADITIONally regarded as the task of philosophy. But many different opinions have been held as to the way in which the inquiry should be approached and the kind of results which may properly be expected from it. The older philosophers tended on the whole to proceed by reasoning from certain fundamental principles or propositions, which they regarded as self-evident, to the construction of metaphysical systems on the grand scale. It cannot be denied that this process, into which it has always been found necessary to introduce a speculative element, is a fascinating one. But it has never been successful, and the systems produced have always been very vulnerable to criticism. Accordingly, the tendency in recent years has been to abandon the search for an all-embracing system based on pure reason, and to limit the aim of philosophy by concentrating on the piecemeal investigation of special problems in the light of actually observed facts and the incontrovertible 'laws' of logic. Considerable success has attended this method, though not so much in the obtaining of definite solutions as in the clarifying of ideas, the removal of common ambiguities and misunderstandings, and the determination to some extent of the limits of what it is possible to discover about the ultimate nature of reality. But this success has been achieved in a relatively narrow field. Its most evident triumphs have been in relation to philosophy of science and our knowledge of the external world. The analysis of traditional concepts such as those, for example, of Mind, Matter, Space, and Time, has proved of particular value as a regulative process and a philosophic discipline.

But whatever may be the right view of the function and method of philosophy, what the ordinary man asks of it is that it should provide what he calls an 'explanation' of the nature of the Universe. This is a legitimate kind of request, but before we can decide how far it would

be possible to accede to it we must discuss the meaning of the term 'explanation.'

The Meaning of 'Explanation'

All ordinarily accepted explanations are found, on analysis, to consist in the description of the relatively novel and unfamiliar in terms of the relatively commonplace and familiar. Descriptions of the latter are summarized, for brevity and convenience, in what are known as 'general laws,' and attempts are made to bring new facts within the scope of these laws. If these attempts are successful we feel that the new facts have been 'explained.' If they are unsuccessful the laws are modified so as to bring both the old and the new within their scope, and again we feel that an explanation has been effected. Nevertheless, the fact remains that these so-called explanations are nothing but descriptions, generally highly condensed, of the way in which things behave or, if you like, the way in which events take place. This is inevitable, and if we try to push the process farther back we are led on and on without satisfaction until finally we come up against the ultimate question which lies at the root of the trouble, namely: "Why does anything at all exist?" But this question is either meaningless or unanswerable. We must therefore begin by reconciling ourselves to the fact that the only practicable aim of philosophy is the discovery of how things actually do behave, and how events actually do happen (using the terms 'things' and 'events' in the widest possible sense), and abandoning the attempt to discover *why* (in any ultimate sense) they behave and happen in that way. There are, nevertheless, circumstances in which a relative mitigation of this somewhat bleak conclusion is possible, as I shall presently suggest.

At this point, however, I should like to utter a warning regarding the pronouncements of certain scientists of repute. The remarkable progress of physical and biological science during the nineteenth century resulted, during the last part of that century, in statements by the scientists of a philosophy crudely materialistic in type. This philosophy gained a wide vogue among the intelligent and 'educated' public. It was expressed largely in terms of the current conceptions of

atoms and energy which were considered to have reached a state of finality. In view of the confidence—indeed, the complacency—with which these opinions were held, the fact that, after so short a time, they are now a completely exploded myth is a salutary warning against any kind of dogmatism in the expression of philosophical theories, especially on the part of scientists. During the first part of the present century there was, however, a welcome change in the general attitude of scientists in this respect. They came to realize that the propositions of science are only descriptions of fact in comparatively limited fields, and cannot themselves form metaphysical theories of the ultimate nature of reality, to which, indeed, they can only be made relevant in so far as their nature and limitations are fully understood and taken into account. Recently, however, there have been signs of an unfortunate reaction in some quarters. As a typical illustration of this I will quote a remark which has been attributed to an eminent biologist. He said, in effect, "The discoveries of science and psychology have made the hypothesis of the existence of God unnecessary." Pontifications of this kind—and they have a familiar ring—are mischievous nonsense. Mischievous, because the reputation of the speaker, in his own field, tends to give a weight to his pronouncements regarding the wider field of philosophy which is out of all proportion to their merits. Nonsense, because they really mean nothing. Thus, in the example quoted, what is meant by 'unnecessary'? One can only suppose that the speaker thought he meant that the hypothesis of the existence of God is unnecessary to 'explain' the Universe which has already been fully 'explained' by science, including psychology. Now, as we have seen, science does not explain—it only describes. This, by the way, has been said many times before, but it seems to be necessary to go on repeating it. Moreover, the descriptions of science do not throw any light directly on the question of the existence of God, though they may be brought into relation with it, as we shall see later. But there is no reason whatever why the existence of God might not be a fact additional to the facts described by science in what is a limited field. The statement we are considering would only be significant if it were really meant to imply that science gave a complete and exhaustive *description* of the Universe—and it is difficult to believe

that any scientist would presume to say this—or if it were altered to say that science *disproved* the existence of God. But it would not then be true.

A striking example of the fallacies which may result from the confusion of description with explanation is also provided by the biologists, who nowadays seem to be worse sinners in this respect than the physicists, whose confidence regarding the real significance of scientific knowledge has been rather undermined by the investigation of relativity and quantum phenomena. It is not uncommon for a biologist to assert that evolution in accordance with Darwin's theory of Natural Selection is a purely mechanical process not requiring the existence either of individual or universal purpose. Let us examine this statement. According to the theory of Natural Selection, there are apparent among the many variations in degree and in kind which occur, or have occurred, in living creatures some which are such that the beings who are characterized by them survive while their fellows do not. The process of evolution therefore results in a gradual selection of animate beings developing in certain specific directions. If we ask why the traits in question have this effect we are told that they enable their possessors to adjust themselves more adequately to their environment and to compete more successfully in the struggle for existence. If we inquire further what is the criterion of this success the only answer appears to be the fact of survival. This is clearly circular. All it comes to is a description of the fact that creatures with certain traits do in fact survive whereas creatures with a defect in these traits do not, and of the way in which evolution proceeds as a result of this. Hence the theory of Natural Selection is quite irrelevant to the question of the existence of purpose in the world (and is consequently quite compatible with the latter) and there is nothing in it which is in any real sense an 'explanation.' It is as if a man, who, after watching the movements of the hands of a clock over a period, gives a general rule for these movements and is able to predict the future positions of the hands, then claims that he had 'explained' the movements by a theory which does not require to appeal to anything beyond the clock-face and hands. But he would be quite ignorant of the nature of the interior mechanism of the clock, and (according to the biologists' type of

argument) would see no reason to consider the possibility of its existence. The fact that, in the evolutionary process, creatures with some characteristic X survive cannot show that the Universe is not purposely created in such a way that the possession of X does in fact lead to this result, a result which the creator might regard as desirable and might therefore have constructed the Universe accordingly. Equally the facts of Natural Selection cannot prove the existence of purpose. But the real point here, as we shall see later in other connexions, is what beliefs about the ultimate nature of reality are most satisfying to the human mind because they render the observed facts, *described* in such theories as that of Natural Selection, most intelligible to it.

Complications of Analytical Philosophy

I have referred to the fact that, on the whole, the tendency of recent philosophical thought has been an analytical one. Close consideration has been given to method and terminology, including a searching analysis of words and ideas in common use. Traditional problems have been attacked by redefining them in the light of this analysis and investigating them by the new methods. Attempts have been made to indicate how far, and to what extent, the results can be regarded, in a significant sense, as solutions of the problems in question, and where no solution has been arrived at, it has sometimes been possible to show, either that, with further investigation by still better methods (if such should be found), a solution might yet be obtained, or that the analysis proves that a solution of the kind sought is not possible by the very nature of the case. This has led on to attempts to determine the limits of what is proper and possible in philosophical inquiry.

No one could deny the great value of the results achieved by the analytic method, especially as regards pure philosophy. But I do not think it is sufficiently realized that the analysis has produced very considerable, and perhaps undesirable, complications in regard to practical or applied philosophy—applied, that is, for the instruction, benefit, and guidance, not merely of professional philosophers, but of humanity as a whole.

I will illustrate this point by reference to a central problem, the analysis of the mind. During the course of philosophic history the individual mind has been conceived in a bewildering variety of ways, ranging from the idea of a unitary being called the Soul or the Ego to that of a mere collection of sensations, thoughts, desires, volitions, and so on which are somehow in close association. Recent theories tend more to the second of these extremes. Now consider a statement like the following: "I shall survive bodily death and thereafter enter upon a state of happiness." What the ordinary man asks of philosophy is whether it can express an opinion on the probable truth or falsity of a statement of that kind, for this is of urgent practical importance to him. He says, in effect, "This statement conveys something significant to me—I know pretty well what I mean by it—and, if you are able to assure me that it is probably true, I don't care a bit whether you call the 'I' in it a soul or a mere bundle of mental states—that is of no *practical* importance to me."

Now it is clear that, in order to give an opinion on a statement of the kind we are considering, the philosopher would have to analyse the terms which occur in it. But the point I am trying to make is that, apart from any analysis, the statement as it stands does, in fact, convey something definite, practical, and important to the ordinary man, and, whatever analysis may be made, he wants in the result an answer in terms of what is contained in the statement as it stands. We all of us, indeed, continually employ forms of expression which have a definite practical significance for us, though detailed analysis of the terms employed may reveal ambiguity and lack of clear definition. While this analysis is therefore important both theoretically and also practically, in so far as it prevents us from making mistakes in action through misunderstanding of the meaning of terms, we must beware of allowing the complex results of the analysis to blind us to the fact that many common statements and beliefs in generally accepted terms have a real practical significance which is of great importance for the persons concerned and which frequently serves as an effective guide to action. At the same time we should avoid emphasizing the results of analysis (important though these are) in such a way as to create doubts in the minds of men regarding the importance and practical

significance of everyday language and ideas. In brief, as I have already suggested, the latter have a pretty definite meaning for all of us in practice, even though we are not always able to express this in precise and accurate language; and philosophy, if it is to be of practical benefit, must be ready to take account of this and to express its results in the same kind of way when the circumstances require.

Let us pursue this point a little farther. Suppose a person says, "I see a patch of red." He knows quite well what he means by this statement, which mentions an event which we may call 'an experience' or 'a bit of experience.' Statements such as "I hear or touch or feel or think or imagine or desire so-and-so" mention other bits of experience of various kinds. Moreover, in saying, for example, "I see a patch of red," the person in question also knows quite well what he means by the separate terms in this statement. He knows what he means by 'I,' and by 'see,' and by 'patch of red.' We may call what he means by 'I' (which, incidentally, he distinguishes from his body) the 'subject' and what he means by 'patch of red' the 'object,' of the bit of experience. I am aware that these two terms are now slightly *passé*, but they are convenient and I will continue to use them. The relation between subject and object expressed by the word 'see' or (in other bits of experience) by the corresponding word has been variously named—*e.g.*, it is sometimes called the 'cognitive' or the 'presentational' relation. Analysis has frequently been directed to showing that the terms 'subject,' 'object,' and 'presentational relation' do not correspond to real things, or, at any rate, that the splitting up of a bit of experience into these three constituents is artificial. But whatever truth there may be in this, it does not alter the fact that the separate terms 'I,' 'see,' and 'patch of red,' as well as the whole statement "I see a patch of red," have a practical significance for the person who makes the statement.

The event which I have taken as an example of a bit of experience is of the type which we call 'sensation,' the object in this instance (patch of red) being a 'sense-datum.' The classification and analysis of the different types of experience which make up the whole experience of an individual subject is the business of psychology, though the psychologists are by no means generally agreed as yet on the methods

by which these tasks should be carried out nor on the kind of terms in which their results should be expressed. On these matters reference should be made to works on psychology. But the general characteristics of experience, and their implications, and, in certain respects, the relations between the different types of experience, are very much the concern of philosophy, for they are, for us, central facts in the structure of reality for reasons which I shall suggest in the next section.

Existence and Explanation

Arguments about the nature of 'existence' and the various types of 'being' are of long standing but have not been particularly fruitful from a practical point of view. Each of us is certain of the existence of one being—himself—or what I have called the 'subject.' In statements containing the word 'I,' the latter signifies, for the person making the statement, an entity of whose existence he is immediately aware. Subjects do not 'know' themselves as they know other things —awareness of their own existence is more immediate than knowledge. So-called 'self-knowledge' is knowledge of one's qualities (using that term in a wide sense), but awareness of one's existence is more direct than this. I have elsewhere suggested the term 'realization' for the subject's awareness of his own existence.[1] Some people deny the existence of the subject in the sense I have described, or say that there is no reason to believe in it. This can hardly be a matter for argument as the fact, if it *is* a fact, is an ultimate one. But, to me, such doubts or denials seem meaningless.

I prefer to limit the term 'existence' to those entities who have 'being-in-themselves—*i.e.*, whose being does not consist entirely in their relations to other entities. Subjects are existent entities of this kind. If all experience were sense-experience it would be impossible to give any meaning to the existence of the subject apart from that of other entities—that is, assuming that sensation is really a relation between the subject and something else. Without this assumption it

[1] Cf. *Spiritual Pluralism and Recent Philosophy* (Cambridge University Press, 1919), pp. 13 ff.

is difficult to get beyond the position of the solipsist, and although it would not be possible to convince a consistent solipsist (did one exist) of his error, solipsism is philosophically barren and must be avoided, if necessary by an act of faith in believing in the existence of other beings besides oneself.

But, to return to the main argument, sensation is not the only kind of experience, and other kinds, such as thinking and feeling, do not, like sensation, depend directly on other entities. In brief, there is a real sense in which conscious individuals have being *for themselves* and therefore being *in themselves*. Moreover, I agree with those philosophers who, conversely, have found it impossible to conceive that anything has being-in-itself unless it has being-for-itself. As a result, the term 'existence' would be limited to the being of conscious individuals or subjects, who would therefore be regarded as the traditional 'substances' of metaphysical argument. I accept these implications, though I realize that here again we are concerned with ultimate questions and definitions in regard to which one can only state one's position.

I do not think that sense-data exist—that is, that they have being-in-themselves. I adopt the hypothesis that sensation, in which sense-data constitute the object, is the way in which the subject experiences his relations, or his interaction, with other subjects at various levels of conscious being. It was formerly thought that sensation was the effect on the subject, through his body, of entities known as atoms, molecules, electrons, etc., but it is now a truism that physical concepts of this kind are structures of sense-data, and that statements in terms of them are really highly condensed statements about sense-data. Statements about subjects whose interaction is, as I have suggested, experienced by them as sensation, are of a kind quite different from statements about physical concepts. On this view of sensation, sense-data have no being apart from the subjects whose interaction they manifest. Moreover, I find it very difficult, if not impossible, to conceive that qualities of sense-data, such as, for example, 'redness,' have any being apart from the sensations of which they form parts, though I admit that many people do not seem to feel this difficulty. But I greatly doubt whether the differences between their 'realism' and the

view I support (which it is misleading to call 'idealism') will ever be resolvable by argument.

We are subjects of experience, so that we realize what it is to *be* a subject. Even if sense-data, or objects (such as tables and chairs) consisting of groups of sense-data, really existed in themselves we could not realize what it is to *be* a sense-datum or a table or a chair. I therefore suggest that descriptions, relating to the universe of reality, in terms of subjects or conscious beings, are, for us, 'explanations' in a sense which does not apply to descriptions in terms of anything else, for they are more significant for us than any other descriptions could be. But, as we have seen, there can be no such thing as explanation in an absolute or ultimate sense.

It will be seen, then, that the general metaphysical theory which I advocate is that of a spiritual pluralism which regards reality as the existence of a large number of spiritual beings, or conscious subjects, whose action and interaction is manifested, for each, in what we call 'experience,' and who vary very widely in development from rudimentary beings whose actions are probably almost entirely automatic and habitual, and whose interaction with us is manifested in the perception of what we call 'inorganic matter,' to the highest types of mind which the evolutionary process has so far produced. I believe that only by such a theory can many of the difficulties and contradictions raised by traditional philosophic problems be to some extent resolved. But it is not my intention to develop here my reasons for this belief, as I have done that fully elsewhere.[1] In this book I shall attempt an inquiry into the necessity for supplementing the theory of spiritual pluralism by the conception of a unifying principle in the world rooted in the existence of a Being immanent in the whole plurality of spirits, though not merely identical with the latter, but in a real sense transcending them. This is the problem of the existence and nature of God.

Summary

1. Recent philosophy has been mainly analytic in character, and largely concerned with the clarifying of terms and ideas, and the

[1] *Op. cit.*

investigation of special problems. It has also tried to define the limits, and the limitations, of philosophic inquiry.

2. But philosophy is asked to provide mankind with an 'explanation' of the Universe which may serve as a guide, and, it is fervently hoped, as a source of inspiration and encouragement.

3. 'Explanation' in an ultimate sense is not, however, possible. In the result we can only *describe* the nature of reality, but this description may, of course, satisfy human needs and desires—or it may not.

4. We should beware of the philosophical dicta of certain scientists, who, however eminent in their own fields, are apt to lose their bearings—and sometimes their scientific objectivity—when they wander into the wider realm of metaphysics.

5. Analytical philosophy has in some ways tended to complicate matters in regard to the practical application of philosophy for the benefit of humanity at large. We must not underrate the importance and significance of everyday language and ideas even when these are not capable of precise and accurate definition.

6. The idea of experience as consisting in a subject, or 'I,' in relation to an object has a practical significance. The various types of experience are analysed and classified by psychologists.

7. Each of us is certain of the existence of himself, and the term 'existence' may well be limited to the being of subjects who 'realize' their own existence, being aware of it in a peculiarly direct and immediate way.

8. Subjects, or conscious beings, have being for themselves and therefore being in themselves. It is difficult to conceive the one without the other.

9. Sense-data do not 'exist' in the way defined. They are the manifestation, to a subject, of his interaction with other subjects, and therefore have no being apart from the subjects whose interaction they manifest.

10. As we are subjects, descriptions in terms of subjects are, relatively, 'explanations' in a sense which does not apply to descriptions in terms of anything else.

11. It is the purpose of this book to inquire whether the metaphysical theory of spiritual pluralism must be supplemented by some kind of theism, if a satisfactory account of reality is to be given.

CHAPTER II

Theory of Value and Ethics

THE PREVIOUS CHAPTER WAS MAINLY METAPHYSICAL IN CHARACTER. In it I attempted to describe the chief assumptions regarding, on the one hand, the nature and possibilities of philosophical investigation and, on the other, the nature of existence, from which the present inquiry starts. The theory of spiritual pluralism, and the accompanying belief that sense-data do not exist in and for themselves, independently of perception by a subject, must not be confused with mere subjectivism. For the subjectivist, sense-data are in no way independent of the subject who is said to 'sense' or 'perceive' them. Thus they point to nothing beyond themselves. But, for the spiritual pluralist, the form which sense-data take are in part independent of the percipient subject—they are the manifestation of his interaction with other subjects, and therefore their form depends in part on the latter; they would not, however, have any kind of being if no subjects or spirits existed.

Spiritual pluralism—first stated in principle (though greatly modified in detail since) by Leibniz in his *Monadology*—implies that pieces of matter, as we call certain groups of sense-data, are the manifestation or appearance to us of collections of subjects. This cannot be shown to be true—but, equally, it cannot be shown to be false. The criterion by which it must be judged, therefore, is whether it creates in us a greater sense of satisfaction than do other theories of reality by its interpretation of our experience of the Universe, and whether it makes the latter reasonably 'intelligible' (as we say) to us. I have given elsewhere [1] reasons for believing that the theory does, in fact, provide a satisfactory picture of reality up to a point, and illuminates considerably such problems as those of the (so-called) 'evolution of mind,' the relation of mind and body, and 'psychic'

[1] In *Spiritual Pluralism.*

phenomena, while at the same time it leads to possibilities of solving the difficulties arising in connexion with questions such as 'free will' and 'immortality.'

Spiritual pluralism, as I have pointed out, is only satisfactory as a metaphysical theory up to a point, and the discussion in the present chapter is the first step in the consideration of the way in which the theory must be developed and supplemented, if it is to have any chance of acceptance as satisfying as fully as possible the natural human demand for an intelligible picture of the Universe. The discussion in this chapter is mainly ethical rather than metaphysical, but, before embarking on it, it is worth while drawing attention to the light thrown on the status of sense-data by the advances of physical science during the past thirty years, especially in connexion with the special and the general principles of Relativity.

The main philosophical consequence of the Relativity Theory was the discovery by the scientists that the field explored by physical science was far more subjective in character than had ever before been supposed—at any rate by scientists. Readers of books on Relativity will be struck by the many references to the 'observer' and to dependence on the 'point of view' of the observer. Much of the data of physics is said to be 'relative to the observer' in various ways, especially in an epistemological sense related to what may be described as the sensory and intellectual equipment of observers. Now an observer is a subject of experience. It is true that some philosophers have attempted to minimize these subjective implications, or even to deny them altogether, by stating that 'observer' is a kind of symbolical term including in its scope such things as cameras, sound-recorders, etc., which are affected in the absence of a subjective observer and record the same impressions as would be perceived by a subject if his body were in the same position. But this seems to me to beg the question altogether. For the various pieces of apparatus mentioned, and the records they make, are themselves sense-data perceived by subjective observers, and, together with sense-data 'directly' perceived by the latter, are woven into the one coherent picture of the physical world formed by subjective experience.

There are two kinds of subjectivity in the data of physics—the kind

which varies from one subject to another, and the kind which, though it is constituted by sense-data (or the relations between them) perceived by subjects, is *common* in its nature to *all* observing subjects. It is significant that, in the philosophy of science, the idea of data *independent* of any subject has been gradually and unobtrusively replaced by the idea of data *common* to all subjects. This is significant because, though a datum may be common to the perceptual experience of all subjects under suitable conditions, it does not follow that it has any being apart from perception by *some* subject. After these further reflections on the status of sense-data, we may now proceed to the consideration of another field of experience, that of Value.

Value

The view of value, and the ethical theory based on it, which I wish to advocate is in no sense novel in type. The fields of value and ethics have been so thoroughly explored that the devising of some quite new kind of theory in this connexion is too much to hope for. It will be seen in the sequel that the view here presented is hedonistic in type—though I trust not crudely so—but I hope there may be found to be some elements of novelty in its treatment.

Two great and related difficulties in discussions about value and ethics are the very rapid arrival at ultimate concepts and the constant danger of being led into circularity in reasoning and definition. Here, more perhaps than in any other branch of philosophy, one is reduced to what is largely a statement of one's position—a statement the truth of which cannot be logically demonstrated and which must accordingly be judged instead by its ability to satisfy human needs and to help human minds to form an intelligible and self-consistent picture of the nature of reality.

I rather think that value itself is an ultimate concept which practically defies definition without circularity. We can, of course, define value arbitrarily by saying that it is the generally distinctive character of anything that we desire or that gives us pleasure, regarding 'desire' and 'pleasure' as ultimate psychological concepts derived from immediate experience. Or we could define the term more objectively, but

still just as arbitrarily, by saying, for example, that everything which contributes to the ultimate purpose of the Universe (if it has a purpose) may be said to possess 'value.' But an argument which starts from such definitions is obviously not very promising. In view of the difficulties here apparent I shall therefore begin by assuming *provisionally* that all, or most, thinking people attach a fairly clear practical significance to the statement that something has value—more particularly, has value *for them*—even though they may be unable, or unwilling, to define the term 'value' precisely in words; and I shall hope that the development of the discussion will demonstrate reasonably clearly what meaning I am attaching to the term and to statements which involve it.

But I will first make a slight digression. It is not uncommon to distinguish three main kinds of value—namely, beauty, truth, and goodness, relating respectively to objects (using that term in a wide, and rather vague, sense) or, perhaps, patterns, to propositions, and to persons or actions. An important issue is raised at once here, illustrated most clearly in the case of truth. A proposition is either true or false, but I cannot see that a true proposition has, merely in itself, any value except by arbitrary definition. It is more to the point to say that true *beliefs*—*i.e.*, beliefs of true propositions, have value.

I think that these considerations regarding truth apply, *mutatis mutandis*, to beauty and goodness, but I can most readily explain what I mean by this by the first point which I wish to make, for this is directly related to the considerations in question. My point of departure is that, in any sense which has been attributed to the term—that is, any sense which has had real practical significance for human beings—value would not exist in any universe devoid of conscious individuals (if such were possible)—*i.e.*, any universe which did not contain subjects or spirits. I can only state this—it is not a matter for proof. But I would challenge anyone who denies its truth to produce a definition of value, not wildly and arbitrarily divorced from any significance commonly (if not very precisely) attached to that term, which would make its existence possible in a mindless world.

We are here brought abruptly to a fundamental issue around which there is unceasing argument—namely, whether value is, in the final

analysis, 'subjective' or 'objective.' For example, if we describe a thing as 'beautiful' does that mean that beauty is a quality which it possesses in itself, apart from any perception of it, or does this beauty consist in some relation to percipients, so that it has no being independently of perception? More accurately, perhaps, we ought to say, "Is the *value* associated with beauty subjective or objective in the sense indicated?" I believe that the argument advanced in the last paragraph, for believing that no meaning can be ascribed to value in a 'mindless' world, implies logically that value is subjective, and I would suggest that value is really attributed to, and is, in fact, a quality of, 'states of mind'—*i.e.*, states of subjective being. Thus it is the state of mind which the possession or contemplation of a beautiful thing creates in us that we really value, and wish to preserve or repeat, and when we say that anything has beauty or some kind of value we really mean that it is the occasion of states in us of a kind which we value, any reference to the object itself as having value being an indirect one. We will consider later the nature of those subjective states which are regarded as valuable.

One advantage of a subjective theory, which regards value as a quality of certain states of mind, is that it avoids the difficulties, inherent in an objective theory, arising from the necessity of postulating different kinds of value according to differences in kind in the objects valued or differences in their function. We have an example of the former type of difference in that between (say) a beautiful picture and a 'good' act. Perhaps the most often quoted example of the latter type of difference is that between objects having what are called, respectively, 'intrinsic' and 'instrumental' value. On the objective theory, an object is said to have intrinsic value when it is valuable in itself (whatever this may mean) quite apart from anything else to which it may lead. On the other hand, it is said to have instrumental value when, although not possessing intrinsic value, it leads, in whole or in part, to an effect which has intrinsic value. But on the subjective theory the necessity for making these laborious distinctions—the definition and development of which are by no means free from difficulty—disappears altogether. On this theory value is not an attribute either of the beautiful picture or of the good act, but of the states of mind of

which those things are the occasion in certain of the spiritual beings of which reality is made up; while a distinction between intrinsic and instrumental value is not significant, since only states of mind possess value, and, as we shall see later, the quality which constitutes this value is singular and not plural in kind. We could, of course, then say that states of mind had 'intrinsic' value (though this would not add anything to the content of the value concept) and that certain objects and events were instrumental *to* value—that is, instrumental to producing valuable states of mind.

As against these advantages, the subjective theory will have to meet various difficulties of a kind inherent in any theory of value, especially those relating to questions such as are concerned with 'good taste,' 'standards,' and so on. But I hope to show in the sequel that the subjective theory can not only resolve such difficulties in a way not possible to the objective theory, but can thereby be made more self-consistent than the latter.

The arguments brought forward in favour of an objective theory of value are peculiarly unconvincing, and even, in some cases, futile. As an example, I will quote an argument advanced by Joad (in his *Guide to Modern Wickedness*) as conclusive.[1] I must paraphrase for brevity, but Joad says, in effect, that, on the subjective theory, "The statement 'This is beautiful' means 'I like this.' Therefore 'I like this' can be substituted for 'This is beautiful' in any proposition containing the latter without altering its significance." Let us substitute it in the original proposition. We then have "The statement 'I like this' means 'I like this.'" But this conclusion is trivial ('not discussible'), *therefore* (says Joad), the premise from which the argument started (and which implies the subjective theory) is false.

It is difficult to imagine how any professional philosopher could propound this as a serious argument. For, in the first place, though the conclusion arrived at is a trivial tautology it is nevertheless true, and I have never before heard it asserted that, if a true conclusion is trivial, the premise from which it is deduced must be *false*. In the second place, the argument proves (if accepted) altogether too much. For clearly it is formal in type, and would demonstrate that *all* pro-

[1] *Op. cit.*, p. 19.

positions of the form '*p* means *q*' (where *p* and *q* are propositions) are false. We need not, therefore, consider it further. I am not, of course, suggesting that all arguments advanced against the subjective, as compared with the objective, theory are as feeble as this, though I confess I do not find them much more convincing.

There may, perhaps, be cases in which value has a pseudo-objectivity of an indirect kind. This would arise if there were, in fact, objects or events of a type which produced valuable states of mind in *all* subjects. In such cases it might be said, as a figure of speech, that such objects or events had, indirectly, value which was objective in the sense that it was independent of any *particular* subject though not independent of *all* subjects. This is not, of course, true objectivity, and the ideas involved may lead to confusion of thought of a kind which we saw sometimes arises in other fields where the fact that an element is common to the experience of all subjects under suitable conditions may become subtly transformed into the idea that the element has an objective existence in the sense that it is independent of the experience of *any* subject.

We must now pass, without further delay, to a consideration of the nature of the characteristic which is typical of those states of mind to which we attribute value. I believe that it is dependent on what we call 'happiness,' and I shall now proceed to discuss the concept of happiness.

The Concept of Happiness

'Happiness' is one of those terms, to which we have already had occasion to refer, which, as it describes something in experience of an ultimate nature, has a reasonably clear practical significance for human beings though it is difficult to define precisely in words. It is, however, possible to indicate in words the chief characteristics of that state of mind or being which we call 'happiness,' so that it is recognizable by those who have experienced it.

In the first place, happiness is characterized by a sense of inner harmony and freedom from strain (*not* effort) and conflict. This is accompanied by a sense of satisfactory adjustment to the environment,

physical and social. These two elements in happiness are complementary, and one can hardly conceive either existing without the other.

Secondly, happiness includes the element of activity and effort—especially creative activity—in which it is felt that all one's abilities and potentialities are being called into play and developed to a continually increasing degree.

Thirdly, there is a relatively more passive element which involves contemplative and appreciative attitudes of mind, often combined with a sense of relaxation.

Although it is convenient and useful to distinguish these three chief aspects of happiness, they are not in fact separable. Indeed, a supremely important factor in happiness is the interrelation and the balance between the three aspects.

It is important to emphasize the difference between happiness and certain other states associated with it, especially pleasure, joy, and contentment. These three are all elements in happiness, but they are not identical with it. Happiness is a condition with which is associated comparative stability and permanence, while pleasure, joy, and contentment are phases which may be, and often are, comparatively fleeting and transitory. In particular, pleasure may be felt by an individual when he could by no means be described as happy. For example, a sadist may feel passing pleasure in inflicting cruelty, but no one could regard as happy a being with such a distorted and strained mentality. Indeed, the very perversions and inner disharmonies which cause the sadist to find pleasure in such abnormal forms of activity are themselves the negation of happiness.

Nevertheless, it is clear that pleasure has close relations with happiness. It seems possible that, in the limit, the two may become coextensive, for perfect happiness may well imply perfect and enduring pleasure, while it is hard to imagine perfect and enduring pleasure in the absence of perfect happiness. Joy and contentment, too, are intimately concerned in happiness, the first being characteristic of the more active and creative phases of happiness, while the second is associated with the more passive and contemplative phases.

We must now consider the main consequences of taking happiness

instead of value as our basic concept from which to derive a system of æsthetics and (more important) ethics whereon we may found our beliefs and our way of life. I would first emphasize again the advantage which happiness, as compared with value, possesses as a basic concept in that it arises directly from the immediate experience of spiritual beings for whom it has therefore a practical significance even if it cannot be defined in words with complete precision. It is not too much to assume that happiness is continually sought by human beings as a fundamental principle and driving force of their nature, though they are often mistaken in the methods by which they seek to achieve it and in the way of life which they believe will secure it. For it is hardly possible to imagine beings like ourselves deliberately seeking unhappiness. It is true that an individual may, in certain circumstances, choose a course of action which will lead to pain, at any rate temporarily, but only with a view to securing happiness in the final result. The significance of the fact that the pursuit of happiness is a fundamental impulse—probably the chief impulse—of human nature can hardly be overestimated, and to it we shall return in various connexions in the sequel. For the moment I will only repeat that this is what I mean when I say that happiness has value for us—indeed, I take this as implicitly defining what is meant by value, and therefore as implying that value is subjective and a characteristic of happiness alone. 'Beautiful' objects (in a wide sense), 'true' beliefs, 'good' acts and people *are instrumental to* value, being such as are the occasion of an increase in the happiness of individuals and of the community. I do not, of course, mean that an individual does, or should, hold the attainment of his own happiness *continually before him as a conscious end.* This is neither necessary, practicable, nor effective. In any case we are such that we can only achieve our own happiness in, and through, seeking to increase the happiness of others.

The last sentence raises the point as to whether happiness is in any sense quantitative in nature. In a general sense there seems little doubt that it is, for I suggest that it is clearly possible to speak with practical significance of being more or less happy, whether in reference to individuals or to groups. But this does not mean that it is possible to lay down an exact quantitative scale of happiness, and there seems no

reason to believe that an attempt to do this would succeed. But the broad general sense in which happiness is quantitative is enough to provide some guidance to human activity and to give meaning to statements about increase and decrease of happiness. In this connexion it should be noted that happiness in an individual seems closely bound up with happiness in the community, the relation between the individual and his social environment being of so intimate and reciprocal a character that an increase of happiness in the former tends always, in the result, to an increase of happiness in the community in which he lives. Indeed, it seems clear that a definite limit would be set to the happiness of an individual if those with whom he lived remained in an inferior state as regards happiness from which they made no progress.

What, then, are we to mean by 'progress'? Or what, on the theory I am presenting, will be the criterion of progress? One criterion—at least in theory—would be that progress occurs in a group when there is an increase of happiness in some individuals of the group without an 'equivalent' increase in pain or unhappiness or misery (or in whatever we like to call the opposite of happiness) in other individuals of the group—*i.e.*, when there is a *net* increase in the happiness of the group—though it should be remembered that, as pointed out above, increase in the happiness of some members of a community is probably incompatible in the end with decrease in the happiness of other members. No exact estimate of progress could be made, even if conditions rendered the application of such a criterion practicable, in the absence of a quantitative scale of happiness, but it would be possible, if the criterion could be applied, to observe the occurrence of marked progress even if it could not be exactly measured.

There is, however, another criterion of progress, not altogether independent of the one just described, which is worth consideration. Things being as they are, it is hardly possible to achieve even partial happiness in the world to-day without the experience of pain (sometimes physical) and mental conflict. This has tended to lead to a kind of glorification of pain and conflict as 'purifying fires' or as the natural and worthwhile price of happiness. I believe this tendency to be basically wrong, and, indeed, dangerous. For I can see no *intrinsic*

merit in pain and mental conflict, and the onus of proof seems to me to be on those who assert such merit. In what sense can the achievement of happiness through pain possibly be better than the achievement of happiness without pain? I suggest that the fact that such a price has to be paid for happiness is just a symptom of the imperfection of the world as it is and has been; and if it be argued that pain, especially in the form of 'sacrifice,' is necessary if we are to achieve happiness and at the same time increase, and not diminish, the happiness of others, I should reply that this is just another manifestation of the same imperfection of the world.

I hope it will be clear that I am not casting aspersions on the struggles of individuals, and on the sacrifices they make for their own salvation and that of others. What I am contending against is the view that pain and conflict in their various forms are *necessarily* inevitable or worthy in themselves. On the contrary, we should regard the existence of such factors in the achievement of happiness as a challenge to us for their removal, the ultimate aim being the achievement of happiness without the payment of such an unfortunate price. We might then take as a criterion of progress the degree of diminution in the amount of pain, conflict, and their associated conditions necessary to the achievement of happiness. Again it would not be possible to make exact estimates, but marked changes should be observable if the criterion could be applied in practice.

But are the two criteria I have suggested anything but theoretical? Could they possibly be applied in practice? The difficulty is that we are necessarily trying to compare the present with a past which is either outside our direct experience or (if more recent) only exists in memory. As regards the more distant past, we have to rely on historical description from which it is hardly possible to make significant inferences regarding the actual states of mind of people living then compared with our own. In the case of the past within living memory the difficulty is no doubt much less, though, even so, it is very considerable except when we are dealing with experience which is comparatively quite recent. As regards the latter there seems no reason why some estimate should not be possible as to whether progress, in the sense defined, has occurred or is occurring.

But, whatever view we adopt, and whatever criterion we take, it would be very difficult to defend the view that the present day shows progress in comparison even with (say) the Middle Ages. I think, however, that it might well be maintained that there has been improvement in some of the conditions which are favourable to the achievement of happiness, especially as regards developments in the human mind, and possibly (though this is very far from certain) in some material developments in the life of the community. It seems a tenable hypothesis that there is *on the whole* a fairly steady, if slow, increase in those characteristics of the human mind which we call 'intelligence' and 'enlightenment.' These, again, are terms the exact meaning of which it is extremely hard to define, but they do, I think, connote something real, the development of which is an important factor in increasing the possibility of achieving happiness. Unfortunately, the world has largely failed to take advantage of this improvement in conditions by harnessing them to increase the happiness of individuals and the community as a whole. Moreover, it is painfully obvious that, in certain limited portions of the world at any rate, the movement has been in a direction leading to the very reverse of enlightenment.

Assuming the present theory of happiness as value, and defining progress in general as increase in the happiness of the community, it seems likely that, in view of the nature of the relations between individuals forming the community, to which reference has already been made, progress or, for that matter, regress, proceeds roughly in accordance with a law like that of compound interest or of geometrical progression. For increase in the happiness of the community evidently itself renders the conditions more favourable for the further increase of happiness. If this be true it is therefore of the greatest importance to get the process of development well started in the right direction. Once started in this way, further progress will be aided by the inherent tendency of the process to keep itself going. Unfortunately, as a result of the long continued world failure mentioned in the last paragraph, the process which leads to increasing happiness never seems to have got really under way at all. There have been so many forces pulling in so many different directions that it has not been possible for sufficiently marked bias in the right direction to develop. One can only

hope that the world will at length learn wisdom by experience, and will then be in a position to make a fresh start with the help of those favourable developments in the conditions which make increasing happiness possible to which reference has been made.

But even if real and continuing progress be at length established, where, it may well be asked, does it all lead? What is the final end and aim of the process? The only possible answer is the perfect happiness of all, that is happiness enduring and unalloyed by any element of pain or other disharmony. Moreover, lest it be thought that such a state would imply a static—even stagnant—condition of passive contentment, it should be said at once that this is by no means a necessary consequence, and is indeed incompatible with the conception of happiness. For in view of the infinite variety of pattern in the Universe and the unlimited scope of its possible modifications and developments, the continuance of creative activity, and of contemplation and appreciation, is not only not incompatible with a state of perfect happiness, but is an essential condition of it. Indeed, one can well imagine that experience in such a state would consist in the continual creation and enjoyment of ever-varying patterns in what would, at the supreme level, correspond to our present experience of the various forms of such activities as Art, Literature, Music, Science, Mathematics, and, most important of all perhaps, personal relationships.

It may perhaps be objected that no attention has been given to the possibility that the concept of God may be an essential factor in any theory of value—in particular that value may be indissolubly related to what is often called 'the will of God.' The question of the existence and nature of God will be discussed at some length in later chapters. But let us suppose, for the moment, that God has been defined (as is commonly done) as an omnipotent, omniscient, and beneficent being, who sustains the world. Evidently this definition begs many questions (including the so-called 'Problem of Evil') which will have to be considered, but let us assume that it conveys some broad, though rather vague, significance. Then it is only necessary to say at this point that either God exists or does not exist. If the latter, then no question arises. If the former, then it seems highly probable, for any reasonable significance that can be given to the terms in the definition of God,

that actions and events—and, indeed, any kind of experience—that take place in accordance with the will of God will be such as to produce ultimately a state of happiness in the individuals concerned. It is therefore surely better, in framing a theory of Value, to *start from* some immediate fact of awareness such as the experience of happiness, rather than from the hypothesis of the existence of God which is not an immediately given datum for the majority of people, though some assert that they have what they believe to be a direct awareness of God. We may, of course, be impelled at a later stage of our inquiry to reorganize our ideas and perhaps to base them on the concept of God. But that is, at this stage, no more than a possibility.

I can well imagine that some people may criticize the views I have put forward as implying a purely selfish conception of the ends of human activity, using 'selfish' in a derogatory sense. It is true that the considerations which, I have suggested, do, and should, influence human conduct fundamentally are closely related to the establishment of conditions highly desirable to the individuals concerned. But the same could, I believe, be said of every code of ethics which has been seriously propounded and seriously accepted. I do not know of any ethical system which stops short at the idea of personal sacrifice of a completely unselfish nature, if such an idea has any real meaning. It has never, I think, been maintained, for example, that an individual should act for the benefit of others even in such a way as might condemn him to endless torture in a future life, or to final and absolute extinction, and I very much doubt whether significance could be given to such a conception. In all cases the implication has been that sacrifice will ultimately lead to something desirable for the individual who makes the sacrifice, whether this be called 'blessedness,' 'salvation,' or simply some kind of 'reward' in a future life. The Christian code, in particular, is no exception to this. The Sermon on the Mount is commonly regarded as the most systematic exposition of the ethics of Christianity by its Founder. But the code embodied in the Sermon on the Mount is stated largely in terms of the desirable results for the individuals concerned of behaving in the ways described. Each section begins with the phrase 'Blessed are,' and I suggest that if 'Happy' were substituted for 'Blessed' throughout the significance of the whole

would be substantially unchanged. Any criticism of the theory I am advocating, as putting a premium on 'selfishness,' would therefore lack point; and to speak of ethical codes which, in effect, offer, as a result of their application, the happiness of the individuals who apply them, as 'selfish' in a derogatory sense, is to ignore the nature of the world and the beings who compose it, and, moreover, leads to results in which it is difficult, if not impossible, to avoid contradiction.

I have tried to analyse the experience which we describe by the term 'happiness.' But some may ask what is the *real* nature of happiness, and why do certain things make for happiness and others not. It might, of course, be replied that the nature of happiness is simply the nature of the experience itself, which is immediately enjoyed. But I take it that what such questions are really asking is whether there is anything in the fundamental structure of the Universe which, metaphysically speaking, is the ultimate ground of happiness and of the factors which determine it. I shall deal with this point, directly and indirectly, throughout the last three chapters of this book.

Finally, we must consider the bearing of our theory on questions of what are generally called 'taste' and 'standards of value.' I would venture to say at once that the problems here raised are insoluble on an objective view of the nature of value. To take a simple concrete illustration which nevertheless contains the essence of the matter. Some people prefer Beethoven to dance music, regarding the latter as worthless and even degenerate. Others prefer dance music to Beethoven, regarding the latter as a bore. Similar conflicts of opinion occur in the realm of morals and conduct. Who, then, has the truth of it? The exponents of the objective theory generally tend to say that an objective scale of values is, as it were, 'laid up' somewhere, and that this scale is revealed, even if rather dimly, to a limited body of chosen people who are held to possess 'culture,' or 'good taste,' or 'insight,' or whatever we may choose to call this special form of knowledge. Now I cannot argue about this because it seems to me that it is based on a chain of reasoning which can be immediately seen to be circular, or at best to depend on mere assertion (generally by those who hold themselves to possess 'good taste' or 'insight') or on a purely arbitrary hypothesis. Whether the views in question are expressed in terms of

an objective scale of value or in terms of the alternative, or supplementary, hypothesis of the existence of certain 'sanctions' (determined, for example, by the 'will of God'), it seems clear that these key conceptions completely beg the question at issue in the absence of substantial evidence, in empirical fact or in logic, of the existence either of an objective scale of value in some transcendent realm, or of sanctions.

On the theory of Happiness as Value, however, most of the difficulties seem to disappear or, at any rate, to diminish very considerably. For it is at once seen that what people are really arguing about in this connexion is the most effective way of achieving or increasing happiness; and, as happiness is a matter of experience, there should be no insuperable difficulty in bringing the issues at stake to the test of experiment and observation, especially on a large scale and over a long period. The man who inclines to Beethoven (or, alternatively, to dance music) believes that the state of mind created in him by listening to such music contributes ultimately to the increase of his happiness—or, at least, such a belief, even though it may be implicit rather than explicit, would give real point to his argument. Where the difference comes in is that the man who likes Beethoven holds that, in the long run, listening to Beethoven's music would contribute more to the happiness also of the man who at present prefers dance music than would listening to the latter; though no doubt a process of what the first man would call 'musical education' might be a necessary preliminary. The second man might well, no doubt, believe the reverse, but, as I have suggested, this is a matter which should be capable of being brought to test. Relevant evidence is provided, for example, by the endurance of the works of the great composers of the past as compared with the transitoriness of most dance music, though much care is needed in attempting to interpret the real significance of this fact. Indeed, it is far from improbable that both 'classical' and dance music, in different circumstances and with different people, may play a part in contributing to the happiness of the whole community. Similar considerations to those just outlined apply in the case of opinions relating to conduct and morals.

Some hope and order is produced out of the chaos of conflicting opinion by the fact that large bodies of people agree on certain broad

conceptions as to what should be sought in the various realms of human experience and activity, and the tendencies thus set up are reinforced by the existence of a number of people of liberal and catholic 'tastes.' Thus, to revert to our previous example, there are many people who enjoy both Beethoven and dance music, and who find in both occasions which contribute to the increase of their happiness. I am aware that the *immediate* effect ought perhaps more properly to be stated in terms of what we call 'pleasure,' but the *ultimate* effect of continued experience of this kind is manifested in happiness.

From the foregoing we can obtain a third criterion of progress—namely, increase in the measure of agreement among the individuals composing the world as to what are the most effective ways of achieving happiness. This criterion is in many ways more satisfactory than either of the other two, for it is far more readily applicable in that its basis is something the occurrence of which can be more easily observed. And if it be said that people might happen to agree more and more on something which was *really* bad I can only reply that such a line of argument would simply land us in the old vicious circle, and that I believe that activities on the desirability of which an increasing number of people tend to agree are likely to be such as lead to happiness rather than to unhappiness.

The upshot seems to be that the pearl of great price is not 'goodness,' whatever that may mean, but *Wisdom*—that is, the knowledge and insight which reveals to us the most effective way of increasing the happiness of ourselves and others. I am aware that questions arise as to what is called 'moral responsibility' and the meaning of 'ought,' and that I have not so far dealt with these explicitly. I shall discuss them in another chapter when considering the problem of Freedom.

Restatement in Summary

I will now summarize the main points in the theory I have been propounding, and the summary will provide an opportunity for rearranging the argument in a more logical order.

I start from a fact immediately given in experience—namely, the occurrence in human beings of the state of mind, or being, which we

call 'happiness.' Happiness is a relatively stable and enduring state—it is characterized by a sense of inner harmony and peace and of outer adjustment to the whole environment, it has an active and creative side and a contemplative and appreciative side, and these various elements are closely interrelated and well balanced. The states of pleasure, joy, and contentment are to be carefully distinguished from happiness, but each of them plays a part in happiness.

Secondly, I suggest that a fundamental driving impulse—perhaps *the* fundamental impulse—of spiritual beings or subjects, as manifested in human individuals, is the pursuit of happiness. The individuals in question may sometimes have but hazy notions of the real nature of what they are seeking, they may—and frequently do—differ as to the best ways of seeking it, but ultimately they are striving after that condition of harmony, creative effort, and complete adjustment which alone can give the full, deep satisfaction which the human soul craves, and which we call happiness. Even the gangster, in his crazy and ill-balanced career, is ceaselessly striving after full human satisfaction, but, by reason of the circumstances which have produced him, he is woefully ignorant of the nature of those things which alone can give this satisfaction, and utterly mistaken as to the right way to set about seeking them, and his consequent failure drives him on to ever continuing excesses to which he cannot call a halt.

Accordingly I conclude that to happiness, and to happiness alone, should we apply the term 'value,' and, indeed, I should be prepared to say that only in this way can 'value' be satisfactorily defined. In other words, 'value' is what we ascribe to happiness—or 'valuable' is what we feel happiness to be. The question of different forms of value does not, therefore, arise, but only, in place of it, the discussion of the different kinds of experience which may be *instrumental to* value by their contributions to the establishment of a state of happiness. Factors in experience such as 'beautiful' objects, 'good' acts, and 'true' beliefs have, then, no special intrinsic (and so independent) characteristic termed 'value,' but rather a functional effectiveness in helping towards the production of the one value, happiness.

This theory, in which happiness is the fundamental, and value the derived, concept, largely resolves the difficulties which arise in the

perennial discussions about scales and standards of value. For the argument now shifts from the consideration of what things can properly be said to have 'value' and what are their relative positions in the scale of value, to the consideration of what are the most effective ways of achieving the happiness of individuals and of the community as a whole. Thus, instead of debating primarily in terms of the concept of value, which is an abstraction difficult to understand or to define—except in terms which finally compel us to revert to a subjective theory of the type I advocate, which makes value derivative—we can talk from the beginning in terms of the concept of happiness, a concept which is based on concrete experience. The idea of objectivity, in so far as it has any claim to a kind of validity in this connexion, is replaced by that of community—*i.e.*, by the fact that certain types of experience are observed to be the occasion of an increase in happiness in large numbers of people (perhaps ultimately *all* people), so that these types of experience have this characteristic *in common*, no matter who is experiencing them. Now, arguments in terms of 'taste' and 'value standards' can never be settled; for the 'highbrows' usually appeal to some so-called objective standards or 'sanctions,' which exist independently of us, and to which apparently they alone have access, while the 'lowbrows' are content to say, "Well, anyhow, that is the kind of thing I *like*," and, while on somewhat surer ground inasmuch as they are appealing to something given in their experience, cannot support their case very strongly, for they are speaking in terms of a present transitory pleasure and not in terms of the contribution which the pleasurable experience makes to the increase of stable and enduring happiness. On the other hand, arguments in terms of happiness and the best ways of achieving it, start from facts given in experience, and can be brought to the test of experience, if necessary through planned experiment.

Although amount of happiness cannot be measured exactly on a scale, it has a quantitative aspect in so far as it is significant to speak of being happier or less happy, and possible to observe what can fairly be called an increase (or decrease) in the happiness of individuals and groups. This quantitative aspect is, however, broad and general and not precise and detailed. But it raises the question of criteria of pro-

gress. I have suggested three such criteria in terms of my theory. First, that progress may be said to occur in a community when there is a net increase in the happiness of the community. Second, that it may be said to occur when there is a diminution in the amount of pain which individuals must suffer in order to achieve happiness, the fact that such a price must be paid for happiness in conditions as they now exist being regarded as manifesting the imperfection of the world. Unfortunately, there are great difficulties in the way of applying either of these criteria in practice, though the second is perhaps more hopeful if observation can range (directly or indirectly) over a long period, for historical information could probably give more significant information about it than about the actual degree of happiness of the inhabitants of the world at various periods.

I have, however, suggested a third criterion of a quite different kind. It is based on the assumption that, if a steadily increasing number of people, and groups of people, agree on the types of activity and experience which are to be regarded as desirable and which they will therefore pursue, it is likely that these types of activity and experience are such as will make ultimately for happiness. In applying such a criterion, observation must range over a considerable period of time and over large numbers of people of varying types. But, with this proviso, and if my assumption is correct (and I see no reason to the contrary), progress would be said to be taking place when there was a marked and steady increase in the degree of agreement among the individuals composing the world as to what are desirable modes of behaviour or experience—desirable, that is, because they tend to increase the happiness of each and all. This, in my view, is what people really mean, in the final analysis, when they speak of anything as 'desirable' or 'valuable.' Evidently the criterion I have just indicated is much more easily applicable than either of the other two.

To the criticism that the theory which has been put forward is an essentially selfish one, in that it appeals to the motive of securing desirable results for the individual, the reply is that the same is true in the long run of all religious and ethical codes. Moreover, if it were not so, the logical result would be that, in certain circumstances, it might be right and proper to demand from an individual action of a

character which would lead to his absolute extinction or to relegation to a future of endless pain. Such a conception seems to me to be ethically contradictory. In any case, a system in which the happiness of all is intimately bound up with the happiness of each cannot be described as purely selfish. Nor would there be any more force in the objection that the theory is an ignoble one, in that it lacks the so-called 'grandeur' of the moral law which is a feature of more orthodox systems. For it is difficult to see how it is nobler to try to persuade a man to follow a certain course of action because he 'ought' to do it, the 'ought' being determined by a hypothetical transcendent scale of values or by the will of a hypothetical God, than to persuade him by assuring him that, if he *does* act in the way suggested, he will in fact become a *happier* individual—a statement which can be based on previous direct experience and tested by future direct experience. The latter procedure is certainly likely to be by far the most effective.

These considerations bring us to the final point in this connexion. Is there no place (it may be asked) in your theory for religion, or for a metaphysical theism? It is not possible to answer this question fully at this stage of the inquiry. The latter has started, as (I submit) all such inquiries should start, from directly observable facts, and I have maintained that it is possible to erect, on the basis of such facts, a theory of value and ethics which is consistent and significant, and which provides a sound practical foundation for the guiding principles of human conduct. But I have not so far inquired more deeply into the question as to *why* certain modes of experience bring happiness. It *may* turn out in the end that there is reason to believe that this depends on the existence of a God whose nature is of a certain kind and who has some particular type of intimate relationship to us. These questions we shall explore in due course. The most that can be said at the moment is that my theory is clearly in no way incompatible with religion or with metaphysical theism.

The next stage in the inquiry will be to discuss such questions as Freedom, "Moral Responsibility," and Immortality. But before we can embark on this we must give some attention to an investigation of the nature of Time, which is closely bound up with all the questions just mentioned.

CHAPTER III

Time and Causality

THE PROBLEM OF TIME IS ONE OF THE MOST FUNDAMENTAL—AND one of the most puzzling—of all philosophic problems. It is involved, really or apparently, in such matters as Immortality and Survival, Freedom, and the existence of God and His relation to the world. Indeed, the concept of Time is almost ubiquitous, for, rightly or wrongly, it pervades most of our thinking.

Although we shall, for this reason, be concerned mainly with Time in this chapter, the concept of Time and the concept of Space are so inextricably bound up with one another that any detailed analysis of the one must involve a good deal of consideration of the other. The development of the Principle of Relativity has, of course, made much more clearly manifest the intimate nature of the relationship between Space and Time as well as some of the essential differences between them.

Nature of the Space and Time Concepts

The concepts of space and time arise from special properties of the sense-data or events which form the object of perceptual experience. These properties are certain qualities of, and relations between, the sense-data or events. To the qualities we give the names 'extension' and 'duration.' The relations are denoted by the terms 'before,' and 'behind,' 'above' and 'below,' 'to the right of' and 'to the left of,' 'after' and 'before,' and 'between.' It is possible to give precise definitions of all these terms, but that is not my intention here. The reference is to something which is directly given, and the meaning, in terms of immediate experience, of statements that a sense-datum or an event is extended, or endures, or has to other sense-data or events the relations named above, is something which is commonly understood,

This degree and kind of understanding is all that is required for our present purpose.

The quality of extension, and the relations described by the first three pairs of terms above, are called 'spatial,' and we may regard this as the definition of 'spatial.' The quality of duration, and the relations described by the fourth pair of terms, are called 'temporal,' and this may be regarded as the definition of 'temporal.' The relation 'between' may be either spatial or temporal.

Alternatively it might be said that the relations we have named 'spatial' and 'temporal' constitute ways in which the subject of experience *orders* the objects which he perceives. In other words, this particular pattern of relationships is impressed by the mind on the phenomena which it observes, or (what really comes to the same thing) is selected by the mind from the indefinitely large possible number of patterns according to which the phenomena might be ordered.

But, however we describe the facts, it is clear that spatial and temporal *relations* are aspects of the *structure* of the object of experience, while spatial and temporal *qualities* are features of the *content* of experience, though these qualities themselves give rise to relations of inclusion, exclusion, and overlapping.

The first point to bear in mind, therefore (and it is a point of major importance) is that what is given as fact in experience is the existence of those properties which we call spatial and temporal, and *not* the existence of certain objective or independent entities—namely, Space and Time. Space and Time—or, rather, Space-Time—is purely abstract, being defined as the domain of spatio-temporal relations.

Geometry (more accurately, perhaps, 'geo-chronometry') is the formal science which investigates the pattern of relationships in the spatio-temporal domain. It is important to realize that the existence of a geometry does not imply the existence of a corresponding space or space-time. A geometry can be developed as a formal process of deduction from certain fundamental premises quite apart from the existence of any 'objective' space the properties of which it 'describes.' This fact is a frequent source of confusion. In particular, many people find it difficult or impossible to accept the idea of a closed curved

space, such as the results of the Principle of Relativity lead us to expect. They maintain that a closed space of (say) three dimensions implies a four-dimensional Euclidean space 'in' which the three-dimensional space exists. It is true that the geometry of the closed three-dimensional space can be expressed in terms of a four-dimensional Euclidean *geometry*—or, rather, *six*-dimensional if an exact Euclidean representation is desired. But all that is meant by saying that our familiar three-dimensional space is closed is that the pattern of spatial relations exhibited by sense-data can be expressed in terms of a Riemannian curved-space geometry of three dimensions. The laborious attempt to retain Euclidean geometry by translating the spatial relationships into a geometry of higher dimensions is a work of supererogation, for Euclidean geometry has no intrinsic virtue, and a Euclidean geometry of six dimensions does not imply the existence of a six-dimensional space as an independent objective entity. All that *exists* in this field are the directly perceived spatial relationships, and these can be most simply described by a three-dimensional Riemannian geometry.

We must continually bear in mind the fact that what is immediately given in awareness is, not an objective space-time common to all subjects or 'observers,' but the many 'private' space-times of individual subjects, or, rather, the many private patterns of spatio-temporal relations pervading the field of each individual experience. This field is the object of individual experience, and it may be as well to remind ourselves here that the term 'object' is used to distinguish what is perceived from the subject who perceives. The object thus defined is not 'objective' in the sense that it is independent of the particular subject and open to observation by all subjects under suitable conditions. The object of each individual experience is private to the subject who perceives it—its content (*e.g.*, the redness of a red patch) is incommunicable, but the nature of its *structure—i.e.*, the pattern of relationships which pervade it—can, at any rate to some extent, be communicated to others. It is on this last fact that the possibility of physical science depends, and it is now generally realized that physical science is concerned, not with the content, but with the structure of sense-experience.

In particular, spatio-temporal relation patterns are communicable, and as a result of this it is possible to establish a one-one correspondence between the sets of point-instants in the various private space-times. On the basis of this correspondence there is built up the concept of a single 'public' space-time, each point-instant of which corresponds to a set of correlated point-instants in the private space-times. But it must not be forgotten that public space-time *is* a concept, essentially symbolic in nature, and not an objective entity existing in addition to the private space-times, or the genuine reality of which the private space-times are but partial aspects. Private space-times are the perceived reality—public space-time the conceptual construction.

Public space-time exhibits interesting and significant features. It is of course four-dimensional, but at no point in it is any particular direction earmarked as the absolute time direction. Considerations of relativity make it clear that the origin from which, and the manner in which, the space-time continuum is split into three space directions and one time direction by any particular observer depends on that observer's position and motion, his 'position' and 'motion' being ultimately definable in terms of sense-data. Radiating from each point of public space-time, however, there are regions constituting what may be called the absolute past and the absolute future, respectively, for all observers whose circumstances are such that they may be described as 'occupying' that point of space-time. The remaining regions radiating from the point are, for those observers, neither past nor future, but are said to be simply 'elsewhere.' The positions of the boundaries between the regions of 'elsewhere' and those of absolute past and future are determined by the magnitude of the fundamental velocity, which is equal to the velocity of light.

In spite of the fusion of space and time into the continuum of space-time, there persists a sense of the psychological difference between the perception of space and the perception of time. Corresponding to this psychological difference there is a difference between space and time directions in physical space-time signified by the occurrence in the equations of the symbol $\sqrt{-1}$. The separation between two neighbouring points of space-time, defined by the general homogeneous quadratic function of the differentials of the co-ordinates, is

called the 'interval,' and intervals are of two kinds, 'time-like' and 'space-like.' The interval is said to be time-like when each of the points is in the absolute past or future of the other, and space-like when each point is 'elsewhere' relative to the other. This physical parallel to the psychological difference between the perception of time and the perception of space is interesting and significant.

The transformation from one observer's frame of reference to another's (each being at rest relative to his own frame) provides the one-one correspondence between the point-instants of the two observers' private space-times. Confining attention to the respective time-co-ordinates only, there is established a one-one correspondence between the *instants* of the private time-series of the observers.

Certain apparent difficulties which arise in connexion with the correspondence between the private time-series of different subjects can be resolved by the following considerations. I will take as an example the fact that different people may actually experience what, according to public time, is the same interval, as being of very different lengths in terms of felt duration according to the varying circumstances of the people concerned—to one person an interval of time may seem to pass quickly, to another the same interval (according to public time) may seem to pass very slowly. How is this to be reconciled with the fact that there must be a one-one correspondence between the instants of the time-series of the persons concerned during the interval in question? In the accompanying diagram (Fig. 1) let *AB* represent the duration of the interval as experienced by one subject and *CD* its duration as experienced by another subject, the inequality of length between *AB* and *CD* representing the difference between the psychological durations of the interval as actually experienced by the two subjects respectively. Join *CA* and *DB* and produce them to meet at *X*. The point *Q* represents any instant within the duration

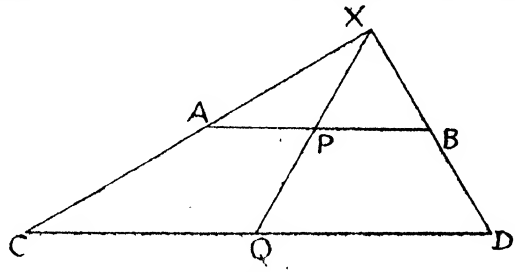

FIG. 1

CD. Join *XQ* and let it meet *AB* in *P*. In this way we determine one, and only one, point *P* in *AB* corresponding to the point *Q* in *CD*, and vice versa. It is clear, therefore, that to every point in *AB* there corresponds one, and only one, point in *CD*, and vice versa. Hence there is no contradiction in the paradox that an interval of *physical* time which is the same for two subjects, as defined by the one-one correspondence between the instants of the interval in the two time-series, may be experienced by the subjects as intervals of *psychological* time of unequal duration.

Moreover, the foregoing considerations hold however short *AB* may be. The limit, in which *A* and *B* approach indefinitely near to one another, corresponds to the case in which one subject passes through a period of physical time, which for other subjects is of finite duration, in what is described as a condition of complete unconsciousness—*e.g.*, under an anæsthetic or in dreamless sleep, if there be such a thing. There is, of course, no gap in the experience of the 'unconscious' subject, for that is a contradiction in terms—one cannot experience a complete absence of experience—but some difficulty has been felt in reconciling this telescoping to a point, in one individual's experience, of the psychological time corresponding to an interval of physical time which corresponds to psychological time of finite duration in the experience of other individuals. I hope I have succeeded in showing that there is no real difficulty here, and that all such contradictions are resolved by the simple fact that the number (infinite) of points in all lines, of whatever length, is the same. As we shall see, there are important consequences of this possibility of exact one-one correspondence between intervals in different experiences of unequal psychological duration, and of the limiting case of this correspondence to which I have referred.

Space-Time and the Subject of Experience

But I will now pass to the consideration of the fundamental fact in the problem of space-time. It is that a subject of experience is not 'in' time or space. Many people to whom it seems obvious that a subject is not in space find difficulty in believing that neither is a subject

in time. But time is simply the domain of a certain kind of relations, called 'temporal,' *within* the object of experience. These relations hold between different bits of the object of experience, and temporal correspondence holds between the bits of one object and those of another object. The *whole* object of experience of any individual subject is *not*, however, in time (or in space), for temporal relations exist only within the object and it is not, as a whole, related by this kind of relation to other objects of experience, as wholes. We can say that one event *within* an individual object of experience is before or after another event, but we cannot say that that individual object of experience as a whole is after or before anything else. We may take as an analogy relations of latitude (say) on the earth's surface. Any portion of this surface is related by relations of latitude to other portions of the surface, but the surface as a whole is not related by relations of latitude to anything.

It should be still clearer that the *subject* is not in time. There are no bits of the subject which are after or before other bits. The subject perceives characteristics called 'temporal' within the object of experience, but evidently this does not make the subject a temporal entity any more than perception of (say) colour relations makes him a coloured entity. I think the confusion here may arise partly because the fact that 'I perceive X after Y' becomes subtly transformed into the idea that my *perception* of X is after my perception of Y—partly, too, because of the alleged sense of enduring which the subject is said to have. Now it is quite unwarrantable to transfer relations which subsist between parts of an object of experience to the subject who perceives this object, and so far as the supposed 'sense of enduring' is concerned, I believe that a little introspection will show that this is nothing more than a 'sense of existing,' without any implication of temporality as it occurs in the object.

At this point I wish to present a theory, which has perhaps some novel features, in which an attempt will be made to resolve some of the paradoxes and difficulties which arise in connexion with Time, and, as a result, to make some suggestions regarding the nature of the latter. Time is closely bound up with Causality, and Causality is more and more seen to be bound up with Probability. I shall therefore

approach the matter through a consideration of the relations between these two. But I would ask the reader, before going on to the section which follows, to refer back to the remarks on it which are made in the Preface.

Causality, Probability, and Space-Time

In what follows I shall put forward a theory of Causality, so far as the latter is involved in the analysis of experience for scientific or philosophical purposes, which is based on the concept of Probability and which leads to a view of the nature of space-time which is, I think, essentially new.

In order to deal with experience in thought we have to analyse it and abstract 'parts' of it for special attention. I start from the assertion that the experience of any individual subject or 'observer' is, in the concrete, so essentially a unity that, when we analyse and abstract from it, we inevitably modify it to some extent.

I shall define an 'event' as something which occurs to an observer—*i.e.*, an experiencing individual—and I shall consider as a single event all that would ordinarily be said to be 'present together' to such an observer. If this compresent field be analysed further into parts I shall call the latter 'partial events.' I shall justify later the use of the term 'event' to connote the whole of the compresent field and not a part of it, in case such a justification is thought to be necessary.

I shall call that which *may* occur to an observer as an event a 'state.' I include the idea of occurrence in the definition of 'event,' so that I shall not speak of the 'occurrence of an event' but simply of an 'event.' An event is the occurrence of a state. States may or may not occur.

The analysis of an observer's experience into events involves some modification of the material analysed, for the reason I have given. The traditional law of causality is roughly of the following form: If a state X occurs as an event, there are principles which enable us to determine, at any rate theoretically, what other states occur. Owing to the modification due to analysis I would substitute for this the following causal law: If a state X occurs there are principles which enable us to determine, at least theoretically, the *probability of occur-*

rence of any other specified state. A state may be supposed to be specified by certain quantities $q_1, q_2 \ldots q_n$ called 'components.'

I shall try to illustrate the implications of this idea by developing it in relation to one particular field of experience—namely, that with which physical science deals. I shall limit the discussion to observations made in the visual field, with which physics is mainly concerned, so that an 'event' will be all that is visually present together to an observer. We will first consider the field of one observer.

Given the occurrence to an observer O of a certain state as an event E, let ϕ be the probability that at least one state, X, of a certain *small* range of states, also occurs to O. There will be an indefinitely large number of possible combinations of events, each forming a 'universe' for O, in which E can occur. Suppose a large number N of such combinations is taken at random and that, in n of these, at least one of the small specified range of states is also found to occur. Then if, when N tends to infinity, the ratio n/N tends to ϕ, ϕ will be the probability of the occurrence of X given E.

I shall suppose that ϕ is of the form $f(x)dx$ where $f(x)$ is a function of a variable x whose values are the measures of some relation between E and X, as X varies, and dx is small. $f(x)$ must, I think, be regarded as the combination (*i.e.*, the product) of two other probability factors P and P'. Given an event E, observed by O, there will be many complete systems of states (*i.e.*, *possible* events) compatible with the event E actually observed. Let us call each of these systems an 'E-configuration.' In a certain proportion of E-configurations a state, or possible event, X, from among a specified unit-range of states, will be included. This proportion (expressed as a decimal) is the probability P. Again, in a certain proportion (but not, in general, in all) of the cases determined by E, and some E-configuration which includes X, X will *actually occur* as an event observed by O. This proportion is the probability factor P'. Hence, given E, the probability of the occurrence of X is PP'.

The minimum necessary assumptions with regard to P, P' are:

(1) Given E, at least one E-configuration exists.

(2) At least one other event, besides E, is observed by O.

These are equivalent to saying that the *total* over-all value of each

of the probabilities P and P' is unity, or $\int_{-\infty}^{+\infty} P dx = 1 = \int_{-\infty}^{+\infty} P' dx$.

Some assumption must also be made as regards the way in which P and P' are distributed in relation to the variable x. In the absence of *a priori* knowledge of the specifications of particular states, we may assume P and P' to be distributed 'at random' in regard to x about their maximum values—*i.e.*, in accordance with the curve of 'normal distribution.'

With the above assumption, and noting that the maximum values of P and of P' (*i.e.*, for $x=0$ or X coinciding with E) must be unity, it is easy to show that PP', *i.e.*, $f(x)$ is of the form e^{-kx^2}, where k, if taken as constant, is equal to 2π. In fact, the equation of a normal distribution curve, with maximum ordinate unity is $y=e^{-\pi x^2}$. Hence $P=e^{-\pi x^2}=P'$, and p (say) $=PP'=e^{-2\pi x^2}$. Also the *area* under the curve, namely $\int_{-\infty}^{+\infty} e^{-\pi x^2} dx$, is unity, so that the condition $\int_{-\infty}^{+\infty} P dx = 1 = \int_{-\infty}^{+\infty} P' dx$, above, is satisfied. I shall not elaborate a prior justification of the assumptions I have made which lead to these results, but shall try to show that the latter lead to consequences which are in general conformity with the fundamental conclusions of physics, and which provide a new interpretation of these and of the nature of space-time.

The probability that, given E, a state X, in the group of states having the small range of relationships to E corresponding to the range of x from x to $x+dx$ (where dx is small), also occurs is $e^{-kx^2}dx$. I shall call $p=e^{-kx^2}$ the 'probability of the state X (whose relevant relation to E has the measure x) relative to E.'

The probability relation is symmetrical, so that if p is the probability of a state Y relative to a state X, then the probability of X relative to Y is also p. Moreover, if p_1 be the probability of Y relative to X and p_2 the probability of Z relative to Y, then the 'indirect' probability, p (say), of Z relative to X is $p_1 p_2$. For, relative to X, a range dx of states about Z will be equivalent to a range $p_2 dx$ about Y, and the probability that, if X occurs, a state within the range $p_2 dx$ about Y also occurs is $p_1 p_2 dx$. Hence, if p be the probability of Z relative to

X, we have $pdx = p_1 p_2 dx$, or $p = p_1 p_2$. Quantities such as p, then, combine like probabilities, *i.e.*, by multiplication. They are, in fact, probabilities per unit value of x, and, for brevity, I shall speak of them as 'probabilities.' The interpretation and significance of the points in this paragraph will become clearer later (see pp. 56 ff.)

Put $x^2 = s$, so that $p = e^{-ks}$. The variable s, in terms of which I shall henceforth work (for reasons which will appear later), will take all real values over the range $+\infty - o - +\infty$ for states which *may* occur as events. For states which, though definable, cannot possibly occur to O as events, the values of s will be imaginary. More generally, if k varies, we shall have $p = e^{-\int k ds}$. The limits between which the index integral is taken will depend on the relation between the occurring state and the other specified state, and will be discussed later. When $s = o$, $p = 1$, so that, as might be expected, there is then certainty of occurrence, the two states in fact coinciding. Variations in k correspond to perturbations of the random distribution of p due to specific knowledge of certain data.

Coming now to the question of actual measurement of s, which is essential to physical science, it is known that, for epistemological reasons, we necessarily order the entities dealt with (namely events and states) in a *fourfold* manner, measurement consisting fundamentally in the comparison of pairs of relations.[1] To each entity there are therefore attached four measure-numbers, or 'co-ordinates' (this term carries here no spatio-temporal implication) one of which differs in character from the other three, also for epistemological reasons. In this connexion I will call the measure numbers τ, ξ, η, ζ, these having the values zero for the state X actually occurring as an event. If Y be a state having, relative to X, the small value ds of the variable s, then ds will be the general quadratic function of the co-ordinates $d\tau$, $d\xi$, $d\eta$, $d\zeta$; but it is known that it is always possible to choose one particular arrangement of these measure-numbers (corresponding to a particular way of ordering states) such that $ds^2 = d\tau^2 + d\xi^2 + d\eta^2 + d\zeta^2$. For the states X and Y, ds is invariant, as it is a measure of a definite relation between X and Y, and therefore independent of the particular way in which the co-ordinates τ, ξ, η, ζ are chosen.

[1] Cf. Eddington, *The Philosophy of Physical Science*, pp. 168 f.

Now, relative to an event or occurring state X, all other states fall into one of two definite classes. The distinction between these classes may be described as being whether, relative to X, any other specified state has a probability that it 'will occur' or a probability that it 'has occurred.' This distinction may be symbolized by taking one of the co-ordinates and giving its value for the specified state a positive sign in the former case and a negative sign in the latter case. The co-ordinate in question (which I will call τ) is thus singled out from the other three, ξ, η, ζ, which are similar to one another in character. I shall call τ 'true time.' It is not identical with the time of physics, as we shall see. As the distinction, just indicated, between the two classes of states is in a certain sense an absolute one, so, for a given observer, the variable τ is absolute in a sense I shall consider in a moment.

I would first, however, point out that, as the probability p is a definite number, the quantity ks or $\int kds$ must be invariant. But this invariance will be in regard, not merely to the way in which the co-ordinates are chosen, but also to the *scale* on which our measures are made.

For convenience we may suppose our measures to be represented on a spatial 'diagram,' which ought, of course, to be four-dimensional. The co-ordinate axes in this diagram will correspond to the variables τ, ξ, η, ζ. The observer will be represented by the origin of co-ordinates O. States will be represented by points on the diagram (but see next paragraph), and the state which is actually occurring as an event to the observer will be represented by the point located at O. Clearly the values of the variable s will be represented by *distances* in the diagram. The positive and negative ranges of the co-ordinate τ correspond respectively to states which have a 'future' or a 'past' probability of occurrence, in true time, relative to O. The direction of the τ-axis in the diagram may therefore be regarded as absolutely fixed and orthogonal to the other three axes. On the other hand, the axes of ξ, η, ζ can be so directed (*e.g.*, by rotation) as to divide up the continuum of states in any number of ways. These three co-ordinates are similar in character, and, for simplicity, I will consider a diagram of two dimensions only, τ and ξ, which I shall call the (τ, ξ) dia-

gram. It will be readily seen that conclusions derived in connexion with this diagram can be extended to the four dimensions.

Any point P in the (τ, ξ) diagram (Fig. 2) represents a state. The probability value of the state is a function of s and therefore of the co-ordinates τ, ξ. Now the probability varies, not only from state to state, but also in regard to a single state. This variation in probability of a single state will be represented by movements of the corresponding point P in the diagram. Actually, therefore, a state is represented by a *moving* point, or a 'track,' in the diagram. In the case of a state which occurs, the track passes through O, the maximum probability of occurrence being unity ($s=0$). For a state which does not occur, the probability rises to a maximum (less than unity), as the corresponding track crosses the ξ-axis, and then diminishes. Such states will be said to 'pass,' the crossing of the ξ-axis corresponding to the 'passage' of the state.

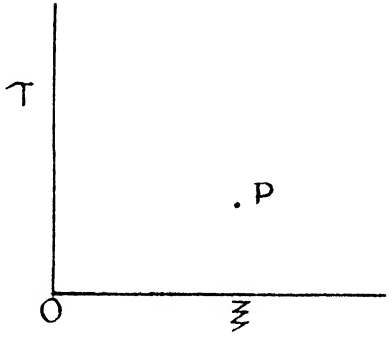

FIG. 2

Now the states which occur as events to O form an order of occurrence. We may therefore regard each such state as associated with a certain value of an index, which I will call n. This index will take, for the set of occurring states, all real values (positive and negative), the value zero being associated with some actually occurring state. Hence some value of n is associated with every track in the (τ, ξ) diagram which passes through O. A similar set of values is associated with the set of tracks passing through any specified point of the ξ-axis, these tracks representing states which 'pass' but do not occur to O. So far as the variable n is concerned, however, we shall be mainly concerned with states which occur, *i.e.*, events, and it should be noted that this variable is quite distinct from the variables τ, ξ, η, ζ.

It should be emphasized that the diagrammatic representation of the variables, to which the probability values of states are functionally related, including the 'tracks' and the 'movements' of points which

represent the varying probability values of particular states, are purely symbolical. There is no implication, for example, of some real 'space-time' continuum of which the diagram is a direct representation. In particular, the order indicated by the variable n must be regarded as analogous to the order of the co-existing terms in a *continuous* mathematical series, and not as carrying, for example, any implication of 'temporal' order of the kind ordinarily conceived.

Since $p = e^{-\int k ds}$, or $\log p = -\int k ds$, and k and s are functionally related to the co-ordinates, there will be a certain value of p associated with every point of the diagram. Hence, as already pointed out, the diagram represents also the field of the probability values of states. I regard p (together with the index variable of order, n) as giving the fundamental relation between states, k and s being derived, though the nature of the functional relation between p, on the one hand, and k and s on the other, is such that it is generally simpler to work in terms of k and s.

A formal demonstration of the formula $p = e^{-\int k ds}$, assuming that $p = e^{-ks}$ when s is small, may be given as follows:

Let P, Q be two neighbouring points in the (τ, ξ) diagram, the small distance PQ being $(ds)_1$, say. Let R be a point near Q, the distance QR being $(ds)_2$. If p_1 be the probability of the state represented by Q relative to the state represented by P, and p_2 the probability of the state represented by R relative to that represented by Q, we have seen that the probability p (say) of R relative to P is $p_1 \cdot p_2$.

Now $p_1 = e^{-k_1(ds)_1}$ and $p_2 = e^{-k_2(ds)_2}$ where the difference between k_1 and k_2 is small. Therefore:

$$p = p_1 \cdot p_2 = e^{-k_1(ds)_1} \cdot e^{-k_2(ds)_2} = e^{-\{k_1(ds)_1 + k_2(ds)_2}$$

Extending this to the case of two points A and B at a finite, not small, distance apart, the probability of B relative to A will be of the form:

$$\text{Limit } e^{-\{k_1(ds)_1 + k_2(ds)_2 + \ldots + k_n(ds)_n\}} \text{ as each } ds \to 0 \text{ and } n \to \infty$$

This limit is $e^{-\int_A^B k ds}$

In particular, the probability of a point P relative to O is $e^{-\int_O^P k ds}$;

that is, the probability that a track through the neighbourhood of P will pass through O, so that the corresponding state will occur as an event to the observer, is proportional to $e^{-\int_O^P k ds}$.

For a small region of the (τ, ξ) diagram, it is possible, as I have pointed out, to choose axes such that $\tau^2+\xi^2=s^2$ (s being small), the geometry of this small region therefore being Euclidean in character. Since, over such a region, we can assume k to be constant, the probability, p, of a state represented by one point in the region relative to a state represented by another point in the region will be e^{-ks}, where s is the straight-line distance between the points. But we must suppose that, to represent the probability values over a larger field of states, represented by a larger region of the diagram, it may be necessary to have recourse to a more general geometry which is non-Euclidean or Riemannian, while k may vary too. The probability of one state relative to another will then, as we have seen, be $p=e^{\int -k ds}$, the integral being taken between the two points representing the states along a track connecting the points. The question is which track. I shall assume that it is the track which makes p a maximum, and therefore $\int k ds$ a minimum, and I shall call this assumption the 'Principle of Maximum Probability.' The track followed by the moving point which represents the changing probability of a given state relative to other states will then be a track of maximum probability thus defined, between any two positions on its course.

Before developing this idea I will at this stage try to relate the theory, as so far expounded, to the structure of those portions of experience with which physical science is concerned, and thus, in effect, relate it to the spatio-temporal conceptions of physics. I will begin with some consideration of the latter.

In what follows I shall assume the customary units which make the velocity of light unity. In the first instance I shall confine my attention to the field of experience of a single observer. According to relativity theory, if O is an observer, the direction of his time axis at the point-instant where is situated the event which is happening to him is along the tangent at this point-instant to his world track. I

prefer, however, not to talk in terms of a kind of pseudo-motion of the observer in space-time, but to say that the direction of his time-axis is determined by the particular order in which events are happening to him. This comes to the same thing, but avoids using terms which make spatio-temporal implications about the observer himself.

In the diagram (Fig. 3) let Ot be the positive direction of the time-axis, as usually understood. For simplicity I shall take only one space variable, Ox being the positive direction of its axis and orthogonal to Ot. The lines OL and OL' bisect the right angles between Ot and Ox and, as is well known, are the tracks of light pulses. The area between the lines OL and OL' is commonly said to represent the 'absolute future' relative to O, for only those so-called 'events' which are located in it can happen to O. Similarly the area between OL and OL' produced backwards represents the 'absolute past' relative to O. Events not located in either of these two areas are said to be 'elsewhere' relative to O, and cannot happen to O. I shall consider a little later the status of 'events' actually located on the lines OL, OL'. With two-dimensional space, the area LOL' would be replaced by the interior of a cone, and in three-dimensional space by the interior of a 'hypercone,' but it is quite unnecessary for our purpose to include these complications, for all that will be said in terms of one-dimensional space will be readily seen to apply equally to space of higher dimensions.

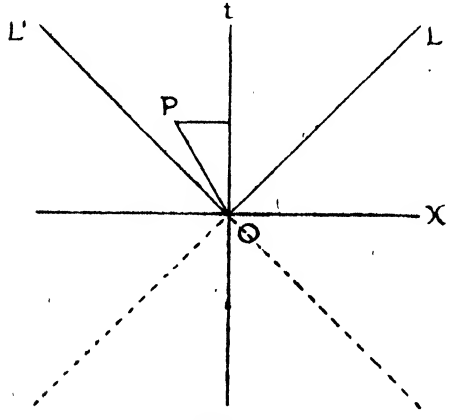

FIG. 3

Let P be a point (x, t) within the area LOL'. On the conventional theory an event is located at P, an event which *may* 'happen' to the observer O, or which O may 'come across.' The value of a variable s, defined by $s^2 = t^2 - x^2$, is called the 'interval' between O and P. The relation holds, in this form, only for regions of Galilean or 'flat'

space-time. More generally, the square of the interval element, ds, is a general quadratic function of the space- and time-co-ordinates, the coefficients in this being the gravitational potentials in the neighbourhood of ds. For a small region, however, it is always possible to choose a set of axes such that $ds^2 = dt^2 - dx^2$. I will call the diagrammatic representation of (two-dimensional) space-time the (t, x) diagram.

In relativity theory an expression of the form $\int_A^B kds$ is associated with what is called the 'action' from A to B, kds being the 'action line-element,' and the variable k the gauge-factor determining the scale of the metric at points in the small interval ds. In my theory $p = e^{-\int kds}$ *i.e.*, $-\log p = \int kds$. Now it is well known that in physics action is associated with minus the logarithm of a probability. Hence my theory can be interpreted in terms of physical science by regarding my variables s and k as corresponding respectively to interval and gauge-factor, the quantity kds corresponding to action. I have already pointed out that my theory requires kds to be invariant, and action is, of course, an invariant. My principle of Maximum Probability (*i.e.*, p is a maximum, or $\int kds$ a minimum) corresponds to the physical principle of Least Action.[1] It is, I think, suggestive that these results should follow from a theory starting with a probability function of the simplest form, determining the structure of a system of states. I interpret experience in terms of certain states which occur (the occurrence being the happening of an event to an observer) plus the probabilities of the occurrence of all possible states, whereas, if I understand it aright, physical theory interprets experience primarily in terms of events only, which may or may not happen to the observer, and which are situated at various (changing) intervals from him. I submit, therefore, that space-time should be regarded, not as a real objective continuum, but as a conceptually convenient diagrammatic representation of the field of the probabilities of states (*i.e.*, possible events) relative to one another, or, more directly, the field of variables which are functionally related to the probability values.

[1] But it must be remembered that we are here dealing with the tracks of states, not of 'material particles.' The relation between these will be considered later.

I will now consider further the relation between the representations embodied in the (τ, ξ) and (t, x) diagrams respectively, and at the same time determine further the nature of the variables involved.

In the first place t corresponds to my variable n—*i.e.*, the variable giving the order in which the moving points representing occurring states arrive at O. t therefore differs fundamentally from my variable τ which I have called 'true time.' If the tracks of the moving point are transformed from the (τ, ξ) to the (t, x) diagram (I will deal with this transformation shortly) the direction of the t-axis will be tangential to the track of the moving point arriving at O, and in general will therefore vary, the x-axis rotating with the t-axis. It is in this way that the variable partitioning of space-time with the changing conditions of so-called 'movement' of the observer may be interpreted; it depends on the order in which states are occurring to the observer as events. But the τ-axis does not vary in this way. It is independent of the order of occurrence of events. We shall see that ξ corresponds to x, though their corresponding values are not identical.

Transformation from the (τ, ξ) to the (t, x) diagram is effected through the equations $\tau^2 + \xi^2 = s^2 = t^2 - x^2$.

In the (t, x) diagram s is real between the lines LO, $L'O$ and their extension (*i.e.*, in the 'absolute future and past'), zero on these lines, and imaginary over the remainder of the diagram. Hence the absolute past and future of the (t, x) diagram transforms into the whole area of real points in the (τ, ξ) diagram, thus representing states which may occur. For points on LO, $L'O$, $s^2 = 0$, therefore $\tau^2 + \xi^2 = 0$, so that $\tau = 0 = \xi$, since τ and ξ are real in the (τ, ξ) diagram. Therefore the lines LO, $L'O$ transform into the single point O of the (τ, ξ) diagram, so that all states corresponding to points on LO, $L'O$ occur. It will be remembered that these lines symbolize the track of light pulses. The remainder of the (t, x) diagram transforms into imaginary points in the (τ, ξ) diagram, representing states which cannot possibly occur so far as O is concerned. In the (τ, ξ) diagram points on the ξ-axis, other than O, represent the passage of states which do not occur, τ changing sign as the axis is crossed.

It is clear that the transformation just considered is a transformation of a family of circles in the (τ, ξ) diagram into a family of rectangular

hyperbolas in the (t, x) diagram, the hyperbolas having O as centre, Ot as transverse axis, and OL, OL' as asymptotes (see Fig. 4). We may suppose that the plane of the (τ, ξ) diagram passes through Ox and is normal to the plane of the (t, x) diagram, so that $O\tau$ is orthogonal to Ot, and $O\xi$ is along Ox. If we superpose the diagram by rotating the plane $\tau O\xi$ about $O\xi$ until it coincides with the plane tOx, then it will be seen that the circle $\tau^2+\xi^2=s^2$ comes into coincidence with the auxiliary circle of the hyperbola $t^2-x^2=s^2$. By the introduction of a parameter θ the transformation equations become $t=s\sec\theta$, $x=s\tan\theta$, $\tau=s\cos\theta$, $\xi=s\sin\theta$. These give $t^2-x^2=s^2$, $\tau^2+\xi^2=s^2$, and we shall have a one-one correspondence between the points on the hyperbola and the points on the circle. By varying s we extend this one-one correspondence to all the points in the two diagrams (t, x) and (τ, ξ).

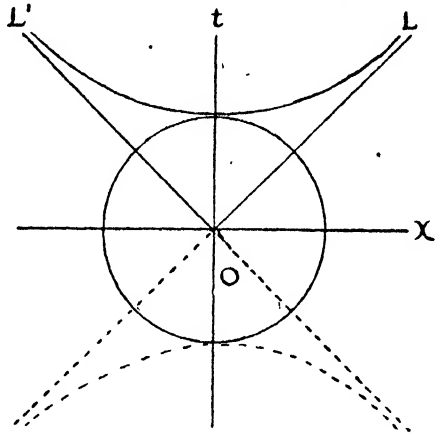

FIG. 4

For three-dimensional space the transformation equations are of the form $t=s\sec\theta$, $r=s\tan\theta$, $\tau=s\cos\theta$, $\rho=s\sin\theta$, where

$$r^2=x^2+y^2+z^2,\ \rho^2=\xi^2+\eta^2+\zeta^2,\ \text{and}\ \frac{\xi}{x}=\frac{\eta}{y}=\frac{\zeta}{z}=\frac{\rho}{r}.$$

More generally the transformation equations should be applied only to the differential elements ds, dr, $d\rho$, etc., the transformation being extended to the whole field by a process of continuation from point to point.

It will be seen that the points at infinity on the hyperbolas, and therefore on the lines LO, $L'O$ and their extensions, transform into the pairs of points where the circles $\tau^2+\xi^2=s^2$ cut the ξ-axis. These points correspond to the passage of states (τ changing sign through zero), so that to the statement that points on OL, OL' correspond to

states all of which occur we must make the exception that points at infinity on these lines correspond to states which pass but do not occur. Hence we have, for the complete (t, x) diagram: Points in the absolute future and past regions of the diagram correspond to states which *may* occur, points on OL and OL' to states all of which occur (except in the case of points at infinity which correspond to states which pass but do not occur) while points in the 'elsewhere' region correspond to states which cannot possibly occur, remembering that we are at present considering the field of one observer only. The 'elsewhere' points correspond to imaginary points in the (τ, ξ) diagram. All real points in the latter correspond to states which *may* occur, except those on the ξ-axis which correspond to states which pass without occurring. O corresponds in this diagram to states which occur, and the lines OL, OL' of the (t, x) diagram transform into the single point O of the (τ, ξ) diagram. When a point crosses the ξ-axis in the latter it corresponds to the disappearance of a point to infinity on the upper section of the hyperbola in the (t, x) diagram and its immediate reappearance from infinity on the lower section of the hyperbola.

I do not interpret the diagram we have been considering in terms of a movement of the observer O along a track which brings him to various points P in turn and to events located at these points which thereupon 'happen' to him, which appears to be the conventional interpretation. I look upon O as fixed, and not a spatio-temporal entity; the points P, which do not represent events but are simply associated with probability values of states (functions of the co-ordinates of P), may be conceived as 'moving' along tracks which may or may not pass through O. If they do the states occur and these are the events which happen to O, the *order* of the events being determined by the movements of the points along the tracks to O. But it must be remembered that these movements are merely diagrammatic representations, indicating changes in probability values, and are not congruent with what we experience as movement within the field of experience.

I therefore conclude:

(1) That observers do not have 'pasts' or 'futures'—they just exist.

(2) Only events have 'pasts' and 'futures,' though these are not other events supposed to be located in the absolute pasts or futures of relativity theory, but the field of the probability values of the states of which they are the occurrence. By analogy, states which pass but do not occur may be said to have 'pasts' and 'futures' relative to their maximum probability values.

(3) That the 'present' should be re-defined as the field of events, the past and the future being the field of the probability of occurrence of states—*i.e.*, the probability of events. Hence the difference between the 'existential status' of the present and the past and future is the difference between an actual occurrence and the probability of an occurrence.

Before going on to consider the correlation of the fields of different observers, let us pause for a moment to take stock of the position we have reached in regard to the field of a single observer. Current theory regards the observer as located, and moving, in a space-time continuum which is the field of events (strictly 'point-events') anyone of which will 'happen' to the observer if his track in the continuum passes through the point where it is situated. The continuum is four-dimensional—3 space + 1 time—but the particular way in which it is partitioned into space and time respectively depends on the motion of the observer. The direction of his time axis at any point of his world track is tangential to the track at that point. For simplicity we have confined our attention to one space-co-ordinate (x) though the extension to three such co-ordinates will be obvious. We thus have a picture of a continuum of events which are referred by the observer to two orthogonal axes, Ox (space) and Ot (time). We have considered the field referred to these axes at any instant (or rather 'point-instant') occupied by the observer O, but as the latter moves along his track in the continuum the axes are supposed to move with him, Ot keeping tangential to the track, and Ox being at right angles to Ot.

For this picture, which I call the (t, x) diagram, I have substituted a (τ, ξ) diagram. In this the observer O is regarded as fixed. The diagram represents the field of 'states.' With each state is associated a track in the diagram which may be regarded as the path of a moving

point. The probability of occurrence of the state for each position of the point is a function of the co-ordinates τ, ξ of the point. If the track passes through O the state will occur as an event. If not, the track will cross the ξ-axis at some point other than O, and the state is said to 'pass,' its maximum probability (less than 1) being associated with the point where the track crosses the ξ-axis. But it must be remembered that the diagram, with its 'positions' and 'movements,' is *purely symbolical*, representing what is really a field of probabilities.

The method of transformation from the (t, x) diagram to the (τ, ξ) diagram has been explained. The ξ-axis corresponds to the x-axis and is taken to lie along it. The fundamental concept in the (τ, ξ) system is that of the element ds, and the close correspondence which has been shown to hold between this and the interval ds of current theory in the (t, x) system is the basis of the relation between the two systems. In view of the correlation between the two systems, the metric of the (τ, ξ) diagram will be correlated with the metric of the (t, x) diagram, and is defined by the expression for ds, the square of the interval, which conforms to the general theory of Relativity including the theory of the gravitational field.

It remains to consider further the significance of the suffix n. As each state is represented in the (τ, ξ) diagram by a track, each of these tracks will be associated with a value of n, which may thus be regarded as a parameter identifying the track. n is an index of *order* and, in terms of the metaphor of movement and position, its values determine, for any point on the ξ-axis (including O), the order of arrival there of the moving points whose tracks cross the axis at that point, which is associated with maximum probability. But it must again be emphasized that this *is* a metaphor, the real order being timeless like that of the terms of a mathematical series. The order of arrival of the points at O determines the direction of the t-axis in the (t, x) diagram (which is also, of course, really only symbolical), the direction of this axis at any 'instant' being tangential to the track in the (t, x) diagram which corresponds to the track in the (τ, ξ) diagram of the point which is arriving at O at that instant. Hence the direction of Ot will continually change—as it does when, more conventionally, O is considered to move and 'come across' events—the direction of Ox changing with

it. But the direction of the τ-axis in the (τ, ξ) diagram *does not change*, nor does the direction of the ξ-axis change *in the* (τ, ξ) *diagram*, although $O\xi$ moves with Ox, for the plane of the (τ, ξ) diagram is normal to that of the (t, x) diagram. We can picture the (τ, ξ) diagram as pivoting *as a whole* about the τ-axis like a hinge, $O\xi$ swinging round with Ox (see Fig. 5), but this makes no difference to the directions of the axes *within the diagram*, and the transformation from the values of t, x to those of τ, ξ continues in accordance with the transformation equations previously considered.

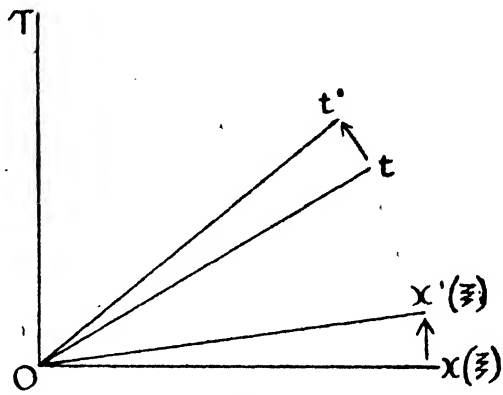

FIG. 5

In order to define a field of probability of occurrence of states a minimum of two variables is required, for we have to fix the general way in which the probability varies and also to distinguish the particular way in which the variation operates in particular states. In the theory we have been discussing the two variables are, respectively, s and k.

In defining the metric of a space-time continuum two variables are involved, one associated with the co-ordinate—or mesh—system, the other with the gauge or unit of measurement. The expression for action is of the form $\int k ds$, where ds is the interval element which, when given in terms of the co-ordinate differentials (with coefficients which are functions of the co-ordinates), determines the mesh-system, while the variable factor k (also a function of position) allows for change of gauge. We have seen that this kds of relativity theory closely corresponds to kds of the diagram, each being equal to minus the logarithm of a probability. The value of k at any position on the (τ, ξ) diagram will be a function of ξ, the space-variable, and n, the parameter corresponding to the track (associated with a state) whose moving point is passing through the position. The variation of

the ds metric in relativity theory depends on the gravitational field—in fact, it actually constitutes the field—while the variations in k constitute the field defined in ordinary theory by the electro-magnetic scalar and vector potentials. Hence, confining attention to the field of physical states alone, the factors determining the distribution of the probability of states over the whole field are what appear in physics as gravitational and electro-magnetic potentials.

We may now consider briefly the correlation between the fields of different observers. We are not now regarding the latter as spatio-temporal entities located in a common continuum with differing frames of reference according to their relative positions and movements. On the contrary, we make no assumptions regarding the relations of the different observers to one another, but simply regard the fields of the observers as symbolized by different (τ, ξ) diagrams which are of course related. In the ordinary theory the t, x co-ordinates of points in the system of one observer are related by transformation equations to the co-ordinates of the points in the system of another observer. Corresponding to this, in view of the relation between the t, x co-ordinates and the τ, ξ co-ordinates, there will be transformation equations relating the co-ordinates of points in the (τ, ξ) diagram of one observer to those in the (τ, ξ) diagram of another observer. Moreover, features of the (τ, ξ) diagrams which are invariant for different systems of axes are expressed in the usual way by tensor equations corresponding to the tensor equations of the (t, x) systems.

There is one other point which should be mentioned again here. We have seen that a certain order of states (indicated by the suffix n) is associated with each point on the ξ-axis, and that this can be used (with ξ) to identify the various states and the tracks associated with them. We choose the points on the ξ-axis as convenient for reference, but it should not be forgotten that an order of states (and therefore of tracks) is associated with *every* point of the (τ, ξ) diagram.

I shall now try to indicate the way in which my theory seems to link up with modern 'microscopic' physics. Hitherto I have, for explanatory reasons, rather written as if the tracks in a (τ, ξ) diagram are known. This, of course, is not so in practice. What *is* known (if certain scientific hypotheses are assumed), at any rate ideally, is the

probability that a track will pass through any particular point of the diagram, given some specific piece of information about the track, such as that it passes through a certain other point or points in the diagram. Hence, given this information, there is associated with the track (and therefore with the state which it symbolizes) a certain probability distribution—namely, the distribution among the various points of the diagram of the probabilities that the track passes through the respective points. There is an obvious analogy between this and the view of the ultimate particles of physics suggested by quantum phenomena—namely, that, given certain information about any such particle, its position is not definitely fixed but is associated with a probability distribution representing the probabilities that the particle is in fact situated at the respective points of the space-time continuum.

We must not, however, proceed forthwith to identify the particle with a point-event or 'event-particle,' or with a single state which may occur to the observer as an event. In attempting to give a general interpretation of 'microscopic' physics in terms of my theory I would first point out that, for its data, and for confirmation of its predictions, physics is entirely dependent upon observed events. Hence, in the last analysis, all the statements of physics must be about observed events, including the probabilities of these. Note that I speak of *observed* events, for I do not think it is possible to separate the event from the observation. An event *is* something which is experienced, and, in saying that it is 'observed,' we are simply indicating the presence in the whole event situation of a certain attitude of mind of the subject or 'observer.' The trend of relativity and quantum theory seems to hammer in this conclusion more and more insistently. The propositions of physics are therefore just as much statements about our knowledge, or observation, of events as statements about events considered in any sense in abstraction from observation.

Concepts such as 'uncertainty' and 'probability' refer to knowledge as much as to the objects of knowledge, and the necessity for using them arises largely from the fact that we cannot separate relations between 'events' or between 'material bodies' from the knowledge or observation of these relations.

So far as the structural aspect is concerned (and physics deals only

with structure), a material body is a set of relations inherent in a system of events and possible events, that is a system of states. Each material body is a selection from the interrelations within the system of states, the particular selection being indissolubly bound up with observation. Strictly it follows that every material body (as thus understood) is represented in some degree in every state, and, therefore, in every event.

Now I have been suggesting throughout that the fundamental relations between states are probability relations. It would follow that a material body is a set of probability relations. Every state is associated with a set of probabilities—namely, the probabilities of all other states relative to it. The various combinations of these probability relations are the representations in the state of the structure of the material universe. Each combination represents a certain selection of material structure—*i.e.*, a material body. Indeed, this is really putting the matter the wrong way round, for, as I should maintain, the material Universe, or any part of it, as it occurs in physics, actually *is* the set of probability relations in question. In the case of a macroscopic body we are dealing with a statistical assemblage—namely, a group of superposed probability distributions which are the ultimate constituents or 'particles' of the body. Hence, as I will explain in detail later, the fact that the structure of a macroscopic body is of a probability type will be masked, for all the probabilities involved will be high, closely approaching unity. But this will not be so in the case of microscopic bodies, and that is why, in the analysis of the microscopic phenomena associated with electrons and quanta, physicists have been compelled to make continual use of probability concepts. The conclusion has been reached that, fundamentally associated with every material particle, there is a something, denoted by ψ, which it is not at all easy to define but which is in the nature of probability and is distributed throughout the spatio-temporal field. Indeed, the particle *is* this ψ-distribution, remembering that the events whose interrelations really constitute the particle include observation.

There is something closely analogous to the last point in regard to the states themselves. It is, I think, true to say that, so far as structure is concerned, a state is actually constituted by its probability relations.

This is perhaps best understood through the representation of states in the spatio-temporal diagram. I have been trying to show that this *diagram*, which is based on the probability relations of states, is really identical with the space-time continuum of physics. Speaking in terms of the latter we may suppose the condition of affairs represented by any point of the continuum (which is the state represented by the point) to be specified by the values of the fundamental tensors at that point, namely G, the metrical tensor, and T, the energy-momentum tensor.[1]

But these determine, and are determined by, certain quantities, the $g_{\mu\nu}$ and k_μ, and their derivatives, which define the metric at every point by relating the differential element of interval, ds, and the gauge, to possible co-ordinate frames of reference, and which correspond respectively to the gravitational and electro-magnetic potentials of ordinary physics. Hence, if the lay-out of the continuum in regard to the interval-element ds and the gauge-factor k is known at every point the values of the fundamental tensors are everywhere determined. Translated into terms of my theory, this means that, if the field of the variables k and s is everywhere determined, the nature of states is everywhere determined. But the field of the probabilities p, and the field of k and s, determine one another. Hence the nature of a state is determined by its probability relations and, structurally, is identical with the latter.

Every element of the physical world has a static and a dynamic aspect, the former in respect of its relative position in the whole and the latter in respect of possible changes in that position. It might therefore be expected that probability relations would involve both these aspects, and it is, in fact, now well known that it is impossible to fix the position or the velocity (or momentum) of a particle with precision. But a curious result emerges—namely, that the conditions of observation which aid increasing accuracy in fixing position hinder accurate determination of momentum, and vice versa. Neither, however, can be determined exactly. There is a definite lower limit to the

[1] For convenience, I have named these tensors by certain invariants associated with them; but their components, relative to a chosen frame of reference, are, of course, commonly denoted by $G_{\mu\nu}$ and $T_{\mu\nu}$.

product of the two errors involved. I shall deal with this point in greater detail later. But I suggest that, in terms of events, the fundamental reason for this relation between the determinations of position and of momentum may be that in fixing position accurately we narrow the gauge of observed events as much as possible, whereas this narrowing of range hinders exact determination of velocity. You cannot determine velocity merely by observations 'at a point,' so to speak, but must make observations over a range of points. But this suggestion is purely tentative.

I will now try to relate the foregoing to my own theory. In physics we consider the distribution of the probability of position of a particle over all possible positions. My theory, on the other hand, is, roughly speaking, in terms of the distribution of the probabilities of states—*i.e.*, possible events—over all possible observers. I think the former can be derived from the latter which I regard as fundamental. It will be remembered that I suggested that the probability, p, of a possible event X, relative to a given event E, should be regarded as the product of two probabilities, P and P', P being the probability that the Universe did in fact include the event X as a possibility as well as the actual event E, and P' being the probability that X would then occur to the observer to whom E occurs. Now the first probability is evidently related to the idea of position—namely, that there is a possible event X at a certain interval from the given event E. But, this being granted, the probability of the occurrence of X to the observer of E will evidently depend on the dynamical conditions of X relative to E, so that the second probability, P', is related to the idea of momentum. The resultant probability, $p(=PP')$, of the occurrence of X to the observer of E is therefore the product of a probability related to the physical idea of position and one related to the physical idea of momentum.

There is a point to which attention should be drawn here. When an event E_1 is observed there is a certain distribution of the probabilities of states relative to E_1. But if another event E_2 is then observed the probabilities are redistributed, for they are now relative to E_2, not E_1. Similarly, in physical science every fresh observation to determine the position of a particle redistributes the probabilities of

this position; in fact, the new observation reconcentrates the probabilities over a narrow range after their dispersal during the period between the two observations.

As the values of s, for that part of the probability field corresponding to the region of the conventional space-time continuum of physics in which intervals from the observer O are space-like, are imaginary, the corresponding values of the probability function $p=e^{-ks}$ will be periodic or wave-like, and the same will be true of the functions P and P'. Apart from more general reasons, therefore, there seems little doubt that these functions are closely related to the probability wave-functions of physics. But the exact nature of the relation is a matter for further investigation.

We may now pass to a second matter, which is of great importance. There is in the nature of things an essential discontinuity. This is the absolute dichotomy between being and non-being. The difference is absolute, for we cannot conceive a gradual and continuous passage from being to non-being, or vice versa. A thing either is, or is not—there is no half-way house. This fundamental discontinuity is recognized in modern mathematical analysis by the introduction of the existence symbol or operator J, which can take only the values 1 or 0[1] —it cannot take intermediate values.

This discontinuity is not reflected in the probability function $p=e^{-ks}$, which is continuous. Clearly, then, there must be something lacking in our theory, for, however nearly p approaches unity without reaching it (that is, however nearly s approaches zero without reaching it), we have non-being. It is only when p actually equals 1 ($s=0$) that we have being. But the continuity of the function p implies a continuous transition from non-being to being, which cannot be admitted. Hence some modification must be introduced. The only possible modification seems to be to postulate that the function p is of such a character in the immediate neighbourhood of O that the last stage of its approach to the value 1 is discontinuous. That is, while $p=e^{-ks}$ except very near O, so that p tends continuously to unity while s tends to zero (so long as s does not actually reach zero), there is a limiting

[1] As J is a symbol, and not an ordinary algebraic variable, we should say, strictly, that it has only two *eigenvalues*, 0 or 1.

value (less than unity) which p cannot exceed so long as s is greater than o. This limiting value, which I will call p_0, differs from unity by a small, but non-infinitesimal, amount.

Let us suppose that the value of ks for which $p=p_0$ is h, so that $p_0=e^{-h}$. In view of the fundamental and universal nature of the discontinuity involved, it seems reasonable to assume that h has the same value in all cases. Evidently the function p has a singularity at O, and the accurate form of the function is somewhat different from e^{-ks}, though it approximates very closely to e^{-ks} everywhere except near O; but it is not necessary for our present purpose to pursue further here the question of the exact form of the function p.

If the above reasoning is sound we should expect to find something corresponding to it in ordinary physical theory, if there is general correspondence between my theory and the latter. We do indeed find it—in the conceptual analysis of quantum phenomena. For the analytical treatment of observations on such phenomena can be successfully carried out only if we suppose that action is emitted and absorbed, not continuously, but in discontinuous small, but finite, amounts. The unit amount or quantum has a universal constant value denoted by h. Evidently this corresponds to the discontinuous jump in value, as O is reached, of ks (which corresponds to action) in my theory. I should therefore regard the appearance in quantum theory of this discontinuity of action as the result in analysis of the fundamental dichotomy between being and non-being. It seems to be generally agreed that, in dealing with quantum phenomena, we are getting very close to fundamentals.

What is the numerical value of h in the expression e^{-h}? In the first place, it seems clear that, as I have interpreted it, h should be a pure number—that is, of zero dimensions in physical quantities. But h corresponds to an amount of action in physical theory, and the dimensions of action in terms of the classical physical concepts are one in mass, two in length, and minus one in time—*i.e.*, $M\,L^2\,T^{-1}$, a fact which we shall make use of later. But as a result of recent clarification and modification of the fundamental concepts—in particular, in connexion with the identification of mass with energy and the interrelating of space and time through a fundamental natural velocity (which, as is

now common, we have taken as unity)—it appears that action may be regarded as a pure number. I have previously related this to the fact that action can be considered as a function of probability, a result of physical theory which is the basis of the interpretation of the latter in terms of the theory I am presenting.

The actual value of the number h will be related to that associated with the natural unit of action—the quantum. Planck's value for this, in 'classical' terms, is $6{\cdot}55 \times 10^{-27}$ erg-seconds. I do not assert that the numerical value of h in my e^{-h} is identical with this. But it will be in some fixed ratio to it, it will be very small but not infinitesimal, and it will be a pure number. It should have an absolute value as a fundamental constant arising from the nature of things, and it may be possible in due course to determine that value (no doubt from theoretical considerations), but I shall not pursue the question further here.

Energy is frequently regarded as the ultimate 'stuff' of the physical world. But to endow energy with physical existence it must be given duration (in the physical sense), that is, it must be multiplied by time. But the product of energy and time is action, so that the latter may be regarded as ultimate physical stuff. Now the emission and absorption of action can be perceived, so that these may be events. But, during its transmission between emission and absorption, action cannot be observed, and so transmission of action cannot be an event, or series of events. It corresponds rather to a state (as I have defined it), or series of states. Hence action, as manifested in events, appears, not as a continuous flow, but as discontinuous. These considerations may help to illuminate our previous conclusions.

As emission and absorption of action are (in common parlance) practically 'instantaneous,' either can be contained, for perception, within the scope of a single event.

The unit of radiation is termed by physicists a 'photon.' With each photon there is associated the unit or quantum of action h. The absorption of a quantity of action nh by matter, where n is always an integer, is thus presumably due to the co-existent impacts of n photons. Translated into terms of my theory, the limiting value (short of unity) of the probability of this confluence of states is, by the principle of combining probabilities by multiplication, e^{-nh}. Evidently the greater

the value of n, the less the probability of occurrence, but the greater the amount of the final discontinuous jump if there *is* occurrence, this being equal to the action absorbed, namely nh. But this corresponds exactly with the observed facts—namely, that while action is always absorbed in integral multiples of h, the greater the value of the integer n, the more rarely is such an occurrence observed. *Mutatis mutandis*, the same applies, of course, to the *emission* of varying numbers of photons together.

The indeterminacy involved in the distribution of ψ is the basis of Heisenberg's "Uncertainty Principle," which can be linked directly with my theory. For it follows from the latter that the greatest value that can be assigned to the probability of the occurrence of an event, given the occurrence of another event, or events, is e^{-h}. Translated into terms of physics this connotes an uncertainty of least magnitude h in something with the dimensions of action, namely ML^2T^{-1} where M, L, and T are respectively the conventional dimensional symbols for mass, length, and time. But $ML^2T^{-1} = MLT^{-1} \times L$. Now MLT^{-1} are the dimensions of momentum, and L, a dimension of length, can be regarded as associated with position, which can only be specified through something analogous to a length. Therefore the uncertainty we are considering can, in physical terms, be regarded as the product of two errors, one of momentum and the other of position, the least possible magnitude of this product being h. But this is Heisenberg's Uncertainty Principle. Therefore in all the respects we have just been discussing there is correspondence between the results of my theory and the results of physical science.

The interpretation of the physical concepts ψ and h which I have given in terms of my theory perhaps render more intelligible the curious fact that, in considering the transmission of radiation, it has been found necessary to regard the latter as consisting of continuous waves, while in considering its emission or absorption it is necessary to regard it as consisting of discrete 'particles.'

We must now consider the question of 'macroscopic' phenomena. The extension to these can, I think, be effected briefly as follows: Let A be the point of the (τ, ξ) diagram corresponding to a known position of the centroid of a large number (N) of particles forming a

non-infinitesimal portion of a macroscopic body, which are states represented by tracks in the diagram for a certain value τ_1 of τ. For another value τ_2 of τ there will exist for each particle a distribution of the probabilities of its position about a position of maximum probability. Let σ be a quantity whose order of magnitude is a measure of the order of magnitude of the 'spread' of the position probability values about the maximum probability value. Then it is known from statistical theory that the order of magnitude of $\frac{\sigma}{\sqrt{N}}$ is a measure of the order of magnitude of the spread of the probability values of the position of the centroid of the particles, for $\tau = \tau_2$, about the maximum probability value. In general σ is not very large, and, as N is very large, $\frac{\sigma}{\sqrt{N}}$ will be very small. The total probability (unity) of the position of the centroid will therefore be mainly concentrated in a very small region about the most probable position. The latter will therefore be the position of 'practical certainty,' tending to absolute certainty as N tends to infinity. Hence it is possible from physical 'laws' to compute the path of the centroid of any non-infinitesimal portion of a macroscopic body with practical certainty. This explains the general agreement, within the limits of perception, of observations of macroscopic phenomena with the results of calculations based on physical laws of the ordinary type.

The attempt to relate my theory to the present conceptions of physics would be incomplete without some consideration of that fundamental generalization of physics known as the Second Law of Thermodynamics, or the Principle of Maximum Entropy.

One way of stating this principle is that it implies a steady increase of 'randomness' in the material Universe. I think this may be interpreted by supposing that the constitution of the system of states is such that the values of the probability variable p, apart from special variations, tend to decrease universally with increasing values of the time variable t, that is $\frac{\partial p}{\partial t}$ is, generally speaking, negative. The only exception to this will be at the point O, for the probability of the state actually

occurring as an event must obviously have the constant value unity. Hence $\frac{\partial p}{\partial t}$ must be zero when $p=1$.

Before developing the consequences of this assumption it is necessary to make a further assumption as to the rate of decrease of p in relation to t. One common type of 'law' in physics of the rate of increase or decrease of a quantity y (say) is that it is always proportional to the value of the quantity—*i.e.*, $\frac{\partial y}{\partial t}=ay$—where a is a constant. This would not apply in the present case for it would not make $\frac{\partial p}{\partial t}$ zero when p is unity. But another type of law, which is more general and more commonly found both in physical and in biological processes, is of the form $\frac{\partial y}{\partial t}=ae^{-bt}y$, where a and b are constants. Here the constant factor of proportionality, a, is replaced by the variable factor ae^{-bt}. Whereas $\frac{\partial y}{\partial t}=ay$ corresponds to a change at ordinary 'compound interest,' $\frac{\partial y}{\partial t}=ae^{-bt}y$ corresponds to a change at compound interest with a variable rate of interest. Now it can easily be shown that the equation $\frac{\partial y}{\partial t}=ae^{-bt}y$ is equivalent to $\frac{\partial \log y}{\partial t}=q \log y$ where q is a constant. Clearly, since log 1 is zero, this would make $\log y$, and therefore y, constant when $y=1$, for $\frac{\partial \log y}{\partial t}$ then equals q log 1, which is zero.[1] I will therefore assume that the law of variation of p with t is of the form $\frac{\partial \log p}{\partial t}=q \log p$, where q is a positive constant since $\log p$ is negative (p being less than, or equal to, unity), so that $\log p$, and therefore p, are decreasing with t as required. We can test this assumption.

For simplicity of statement let us consider a portion of the system of states relative to the observer O which is limited enough to be repre-

[1] Except in the special conditions at O, the probability could, of course, be constant only for an infinite value of time.

sented in the spatio-temporal diagram by a Galilean or 'flat' metric. Then $s^2=t^2-r^2$, where $r^2=x^2+y^2+z^2$. We will also assume k to be constant. We then have:

$$p=e^{-ks},\ \therefore \log p=-ks=-k(t^2-r^2)^{\frac{1}{2}},$$

$$\therefore \frac{\partial \log p}{\partial t}=-k(t^2-r^2)^{-\frac{1}{2}}\left(t-r\frac{\partial r}{\partial t}\right)$$

But $$\frac{\partial \log p}{\partial t}=q \log p=-qk(t^2-r^2)^{\frac{1}{2}}$$

$$\therefore qk(t^2-r^2)^{\frac{1}{2}}=k(t^2-r^2)^{-\frac{1}{2}}\left(t-r\frac{\partial r}{\partial t}\right)$$

or $$t-r\frac{\partial r}{\partial t}=q(t^2-r^2)$$

Now consider the condition of affairs in a 'spatial section' through O of the spatio-temporal diagram. For this $t=0$, so that if $\left(\frac{\partial r}{\partial t}\right)_o$ is the value of $\frac{\partial r}{\partial t}$ for varying values of r in this spatial section, we have

$$\left(\frac{\partial r}{\partial t}\right)_o=qr$$

Hence we have the result that the values of all spatial distances deduced from observations of events will tend to increase steadily at a rate proportional to these distances measured *from the particular point of observation*. But this corresponds exactly to that now well-known physical phenomenon the 'Expansion of the Universe'—namely, the fact that calculations from observations of astronomical masses show that the distances of the latter from the observer are steadily increasing at a rate proportional to themselves. Moreover, it is demonstrable that this recession takes place, not from some point independent of all observers, but similarly from every observer and at a rate proportional to the distance from the particular observer.

I conclude that the assumption of a steady universal decrease in the value of the probability function p, in accordance with a common logarithmic law, not only provides a plausible interpretation of the Second Law of Thermodynamics, but leads to results in conformity with the principle of the spatially expanding Universe, as derived

from observation, and hence suggests a close relationship between two of the very few general statements which can be made about the physical Universe as a whole. It is true that I have assumed a Galilean metric and a constant gauge, but, except for 'local' irregularities, the deviation from this will be very slight over a wide range, and the approximation is certainly close enough to exhibit the general type of observed result which might be expected.

Evidently, in my theory, the ultimate condition would be that p would tend to zero value universally, except at O. This means that, as, relative to O, the probability of every state would be zero, there would be no further change in the event at O. This corresponds to the changeless *physical* Universe which is the final result of the Second Law of Thermodynamics.

It is interesting also to trace the process 'backwards' in speculative imagination. The value of p would tend universally to unity, but all measures of spatial distance in the symbolic diagram would tend to zero, and the physical Universe would eventually fold up into a single absolutely certain event—presumably Creation!

Further consideration of the observer's 'space'—that is, the spatial section through O of the spatio-temporal diagram—gives other interesting results. Assuming k to be constant universally, we have $p=e^{-k\int ds}$, where the integral is taken along a track of maximum probability or least action. In the spatial section, $ds=\iota dr(\iota\equiv\sqrt{-1})$, so that for a state represented by a point P in this section we have, relative to O, $p=e^{-\iota k\int_O^P dr}$, where the integral is taken along a spatial geodesic. Therefore $P=e^{-\iota kr}$, where r is the distance from O to P along the geodesic through the two points. Values of p given by this are, of course, not real, and correspond to states which cannot occur to the particular observer as events. But the important point is that, for these states which are represented in the spatial section, p will be periodic, as $e^{-\iota kr}$ is a periodic function the values of which begin to repeat themselves when r is increased by $\frac{2\pi}{k}$, assuming that there are no 'local' irregularities in the probability function. Putting $\frac{1}{k}=R$, this

periodic repetition of the structure of the group of states concerned, as expressed in their probability values, would correspond to representation by a 'space' or spatial section which is re-entrant, that is finite but unbounded, consisting of a three-dimensional hyperspherical section of the four-dimensional space-time diagram of circumference $2\pi R$. But it is well known that, assuming a negligible electro-magnetic field of force and neglecting local irregularities due to particular gravitational fields, the conception of space derived by physical science from observation of events is that of a uniformly curved and re-entrant continuum. The radius, R, of space will then correspond to $R=\frac{1}{k}$ above.

Again, at the beginning of this discussion I showed that if k has a universally constant value (corresponding to absence of *a priori* knowledge about the specification of particular states) this value must be 2π. Substituting in the above, this would make $2\pi R$ equal to unity. We might therefore regard 2π as the value of the 'natural' gauge factor, and the circumference of space as the 'natural' unit of length. Alternatively, as we are concerned with the product $k\int ds$, or in the spatial section, $k\int dr$, we might take the natural gauge as unity and the corresponding natural unit of length as R, the radius of curvature of space. This is in accordance with the conceptions of modern physics.

To sum up then, I suggest that the result that, assuming a negligible field of electro-magnetic force and neglecting local gravitational fields, the 'space' deduced from observation of events is uniformly curved and re-entrant, its radius of curvature providing a natural unit of length, to be the manner of appearance, in the analysis of observations, of the fact that, in the absence of *a priori* knowledge about the specifications of particular states, the probability function will be uniformly periodic, the constant k which occurs in it then having a certain 'natural' value.

It appears, therefore, that the physical Universe is self-gauging. This is true even in circumstances which, for the observer, correspond

to local gravitational fields. The immediate experience of the observer is limited to the state which is actually occurring to him as an event. Hence the probability values 'radiating' from this start off, as it were, in conformity with the normal distribution of probability values for which k has its natural value 2π, though this distribution is quickly modified by 'local' conditions as the value of the variable s increases. We may interpret this in terms of the concept of spatial measurement by supposing that the material yardstick adapts itself to the local curvature of space so that there would always be the same number of yardsticks required to go round the circumference of the world.

The observed expansion of spatial distances which, as I tried to show, could be deduced from the Principle of Maximum Entropy interpreted as a Principle of Diminishing Probability, will apply, of course, to the whole circumference of the world as measured along a geodesic through the observer; but the circumference will remain the natural unit of length. Consideration of this helps to resolve an apparent paradox which may have been noted in connexion with the Principle of Diminishing Probability. It may be remembered that, at the outset, I pointed out that, for a Universe to be possible for the observer at all, the minimum condition was that both the maximum probability value of states relative to the observer and the over-all integration of the values of the probability function must be unity. But how can this condition continue to be satisfied if the probability values are 'everywhere' diminishing with the time? The fact is that by 'everywhere' was meant 'at every point of the spatio-temporal diagram.' But the factors which determine the metric of that diagram are themselves varying correlatively with the varying probability values[1] so that the natural value of k continues to be 2π and the fundamental conditions continue to be satisfied. The two functions giving the distribution of the probability values P, P' (where $PP'=p$)

[1] We had, in fact, $p=e^{-ks}$, *i.e.*, $ks=-\log p$, and $\frac{\partial \log p}{\partial t}=q \log p$. Therefore $\frac{\partial(ks)}{\partial t}=-\frac{\partial \log p}{\partial t}=-q \log p=qks$.

The equations in the last line, taken together, imply that, as p varies with t, the metric of the diagram also varies in such a way as to keep the relation between p and ks unchanged.

were assumed to be of the normal form, namely $\frac{1}{\sigma\sqrt{2\pi}}e^{-\frac{x^2}{2\sigma^2}}$ (where $x^2=s$), from which it follows at once that k is equal to $\frac{1}{\sigma^2}$, the reciprocal of the variance. As the probability values diminish with the time, the metric of the spatio-temporal diagram will change in such a way, in regard to scales and units, that the value of σ is always $\frac{1}{\sqrt{2\pi}}$, giving $k=2\pi$. This is not incompatible with the limiting condition in which the probability would be everywhere zero except at O, where it is unity, for this condition is approached asymptotically, and the approach would involve infinitesimally small quantities measured in terms of infinitesimally small units.

As so often in modern physical science we are therefore brought once more to the conclusion that the 'laws' of physics are really epistemological, and even, in a sense, tautological. The corresponding 'self-gauging' character of the physical Universe is, perhaps, only what we ought to expect, for it seems reasonable to suppose that the fundamental quantitative features of the world must be in terms of pure numbers and not relative to particular scales or units.

It is not possible to develop further here the correspondence between my theory and the results of current physical science, a process which might be pursued indefinitely. It is clear that the correspondence I have tried to elucidate so far is not detailed or precise. It may or may not be possible to establish such detailed and precise correspondence—this must await further analysis. For the moment I have been content to show that, starting with a new conception of time and causality—and especially of the nature and status of past and future—we arrive at results exhibiting *general* correspondence with current theory of the *structure* of the field with which physical science is concerned. No theory could command any attention unless it led to at least a general correspondence of this kind. What I have tried to do is to give a different *interpretation* of the observed facts of experience on which physical theory is based; an interpretation which (I believe) resolves or reduces some of the classical and obstinate paradoxes

arising in connexion with the nature of time. In doing this I have started with the simplest possible probability function, a function which, in fact, expresses a modified 'probability distribution' of probability values. This function is of the form $e^{-\int k ds}$ and it turns out that the expression for ds can be associated with the value of the interval-element of relativity theory given in terms of the components of the metric tensor or gravitational potentials, while k can be associated with the electro-magnetic potentials. Hence the minimum number of variables required for the simplest probability function correspond between them to the main determinants of the structure of the field of experience with which physical science deals. I have therefore suggested that the network of what are commonly called 'spatio-temporal' relations which form the structure of the field of experience of an observer, and the correlation between the fields of different observers, should be interpreted in terms of relations between the probability values of events, that is of the occurrences of states, and, in particular, should not be regarded as implying the objective existence of a continuum, space-time, 'in' which events (and observers) exist.

I have put forward the foregoing theory as an alternative way of interpreting those facts regarding the structure of perceptual experience which are dealt with by physical theory, and especially by the theories of relativity and of quantum phenomena. In attempting to link up my theory more directly with actual experience we must first consider what is meant by an event happening 'to' an observer. In most philosophical and scientific discussions this is left conveniently vague. In diagrams the observer is represented by a point O, but again the exact implication of this is left vague. Is the point O meant to represent the observer's body, or a small portion of it—*e.g.*, in his brain or sense-organs—or is it meant to represent an ideal abstract observer? If the latter view is adopted I think it leads to all kinds of epistemological difficulties into which I do not propose to enter here.

I think my theory avoids this difficulty. In my (τ, ξ) diagram every event, *i.e.*, every state which occurs to the observer concerned (who is not a spatio-temporal entity), is represented by the point O. The actual area covered by the diagram does not represent a space-time continuum as ordinarily concerned, with events located in it, but the

field of a network of 'co-ordinates' which are the variables occurring in the probability functions of the occurrence of states. A track in the diagram represents a state, and, if the track passes through O, the state occurs to the observer as an event. We can imagine, if we like, the change in the probability of the state as corresponding to the movement of a point along the track.

I may here draw attention to a matter which seems to be a source of some epistemological confusion. Reverting to ordinary terminology, consider the whole visual spatial field of an observer during the very short period of time covered by his 'specious present.' This is commonly regarded as a spatial section of the observer's perceived space-time. Within it we distinguish qualities and relations of the kind which are called 'spatial,' which we have discussed earlier in this chapter. The difficulty arises, I think, when we consider different sections of this kind, thus introducing the time factor, and have to elucidate the spatial and temporal relations between these different sections. In particular, how are the spatial relations of elements within one section comparable with the supposed spatial relations (or spatio-temporal relations) *between* elements in different sections? I should reply that there is nothing comparable in the two cases. I should regard the spatial field of an observer's 'specious present' as one of the events represented by the point O in his (τ, ξ) diagram. Within this field there are the spatial relations of 'above,' 'below,' etc., and the spatial quality of extension, but these are not represented in the (τ, ξ) diagram. What *are* represented are variables functions of which determine the relations between the probabilities of possible states which may or may not occur as the content of different specious presents. I therefore venture to assert (*a*) that spatiality exists only in what is actually perceived by an observer; and (*b*) that physical science does not really deal with spatiality at all, though it may find it convenient to use spatial diagrams in which to represent the values of the variables (or functions of them) with which it *is* concerned. I do not think there is anything particularly novel in these assertions: they seem to me to correspond with the whole trend of mathematical physics in recent years.

Events, as thus defined, form for each observer a continuous series.

The terms of the series exhibit a definite order, and it is the perception of the existence of this order which seems to me to be the basis of the concept of conventional time, as I have tried to show in the foregoing theory. Thus perceptual space (or, more accurately, spatiality) exists within events, but there are no relations between different events similar to the spatial relations within an event. Given certain events it is possible theoretically to calculate from certain principles (the 'laws' of physics, for example) the probability of other possible events, and, as I have already remarked, the values of the variables involved can, of course, be plotted on a spatial diagram, or, if the dimensions required are too many for this, the necessary analysis can be carried out in a manner analogous to geometrical analysis.

The states of which events are the occurrence form a four-fold order. This 'four-dimensionality' of the manifold of states is an ultimate fact, and there now appear to be reasons for regarding it as an analytic, and not merely a contingent, fact. Consideration of the minimal requirements for comparison of relations, and the development of the theory of E operators (and their associated matrices) has led to this result and also to the result that one of the 'dimensions' will have characteristics different from those of the other three.[1]

The analytic (as distinct from the perceptual) difference between space and time is interesting. The difference between the time co-ordinate t and the space co-ordinates x, y, z of conventional space-time lies, not in absolute difference of direction, for the directions of the t, x, y, z axes respectively in the four-fold continuum vary with the circumstances of the observer, but in the fact that, in the expression for the square of the interval, the sign of the square of the time variable is opposite to that of the squares of the three space variables. But in the four variables of my theory, into which t, x, y, z transform, and which we may call τ, ξ, η, ζ (remembering that hitherto, for simplicity, we have only considered one 'space' variable, ξ), the sign of the squares of all four variables is the same. The difference here lies in the fact that the direction of τ at O is fixed, while the directions of ξ, η, ζ, vary with the circumstances of the observer. The directions of ξ, η, ζ

[1] See Eddington's *Relativity Theory of Protons and Electrons* (Cambridge University Press, 1936).

coincide with those of x, y, z respectively and rotate with them as they rotate with the direction of t. τ is in a fifth direction orthogonal to the t, x (ξ), y (η), z (ζ) directions at O and remains fixed. The hypercone of 'absolute past and future' in the (t, x, y, z) continuum transforms into the whole of the real (τ, ξ, η, ζ) continuum. The latter is divided into two halves separated by a three-dimensional (ξ, η, ζ) section. The directions of (ξ, η, ζ) rotate in the (τ, ξ, η, ζ) continuum only within this section as the (t, x, y, z) directions rotate in their own continuum. In crossing this (ξ, η, ζ) section, τ changes sign. It is on account of this fixity of the τ-axis, which seems to give the variable τ something of an absolute character for the observer concerned, that I have called this variable the observer's 'true time.'

It is possible that my restriction of the term 'event' to describe the whole of the objective field (in particular, the visual field) within an observer's specious present may be criticized as it differs from the customary use of the term to some extent. But I find my use convenient, and I think it has some analytical justification in that, in the (t, x) diagram, the interval from O of everything seen by the observer is zero, and accordingly, in the (τ, ξ) diagram, everything seen by the observer is 'at' O. It may be asked, however, whether events in my sense of the term have not got parts which are themselves events. This is a matter of definition. On my definition it would not be correct to describe *parts* of the objective field of a specious present as 'events.' Nevertheless there are evidently certain similarities between the properties of the whole field and those of parts of it. I shall therefore call the latter 'partial events.'

A further question then arises. In nominally estimating the probability of one event from another, are we not really estimating the probability of one partial event from another partial event? For example, in predicting the occurrence of an eclipse from observations of the earth, sun, and moon, it might be said that the data originally observed, as well as the eclipse, if it is observed to occur, are only parts of the whole field. I think this point can be met by considering that the whole field, during an observation of the kind we are discussing, falls roughly into three parts—namely, (A) the data specifically observed; (B) factors necessary to the observation, such as the

observer's instruments, the position of his body, the state of his sense-organs, and, indeed, of his mind; and (C) a remainder providing a general context within which the observation takes place, the existence of which is necessary, though its particular nature may, for the purposes of any specific observation, vary within wide limits. Clearly, then, the partial events necessarily involved in the observations cover a far wider region of the total field than do the partial events which constitute the bare data which are being investigated both at the first and at the second observations. In computing the probability that the eclipse will be an event (or part of an event) for a given observer, we ought to include the probability that the observer will decide to view the eclipse and that his body will be in the right 'position' and in the right circumstances. That is, A and B above, specifically defined, ought to be included, while C too must be included, but need only be very generally defined. Actually, so far as physical science is concerned, what we do is to compute p the probability of the eclipse (A) for the observer, assuming that certain conditions B (specific) and C (general) are satisfied, and in the equation $p=e^{-\int k ds}$, k and ds will then be determined by physical laws.[1] The situation is, therefore, that, given that a partial event A_1 (the original observed data) forms part of an event which is completed by B_1 and C_1, we are computing the probability that there is a partial event A_2 (the eclipse) forming part of an event completed by B_2 and C_2, the B's being specifically and the C's more generally defined. In effect, therefore, we are computing the probability for a given observer of one total event $(A_2+B_2+C_2)$, given another total event $(A_1+B_1+C_1)$.

We saw earlier in this chapter that it is found possible to establish one-one correlations between the elements of the objective fields of different observers, and that the concept of a public space-time is developed from this linkage between the spatio-temporal elements *within* the private perceptual fields. But, as I have now pointed out, relations within the field of an observer are essentially different in character from those between the events constituting the fields of

[1] Note that, while the probability of the occurrence to a 'suitably placed' observer of any specified one of the group of states constituting the eclipse may be small, the probability that *some* members of the group will occur to such an observer may be very high.

different observers. Ultimately, indeed, the nature of the structure which embraces the fields of all observers is determined by the relations between states, some, but not all, of which occur as events for the various observers. These relations are fundamentally relations of probability, the values taken by the variables in the probability functions being in accordance with scientific 'laws' which describe certain ultimate facts about the world, or rather, perhaps, about our knowledge of it.

There remains one point of interest to consider, namely the so-called previsión of the future—waking or dreaming. This topic has, of recent years, been especially associated with the "Serial Time" theory of J. W. Dunne, without some reference to which no discussion of the problem of Time would be complete, for, although the theory in question may be open to serious question, it has certainly aroused great and widespread interest among thinking people. If I understand Dunne's theory of Time aright it amounts in effect to something like this: Suppose the observer to be stationed at a point on a belt which is travelling (say) from west to east. Suppose the whole belt is carried on a platform which is travelling from south to north. Suppose further that the whole system—belt and platform—is in a vast lift which is travelling upwards—and so on, though for further illustration space of higher dimensions is required. The travelling belt corresponds to what Dunne calls Time 1, the moving platform to Time 2, the lift to Time 3, and so on, there being an infinite series of such times for each individual and, indeed, an infinite series of 'observers' corresponding to the various 'times,' though all these observers ultimately coalesce somehow in the single individual concerned. Normally the latter is fixed in his position on the belt, which represents the time of his ordinary experience, but, in certain circumstances, he may be able to get away from this and, so to speak, to wander about to some extent on the platform or even in the lift. It is in such circumstances that prevision of the 'future' may occur, for Dunne pictures future events as waiting, as it were, to be reached. Sleep is a specially favourable, though not a necessary, condition for such prevision to occur.

It is not possible to do justice here to this most ingenious and

thought-provoking theory, or to consider at length the relevant arguments. But I confess that I have been unable to convince myself from a study of the theory, and of the reasons advanced in its favour, that Dunne has really succeeded in the result in proving anything more than (1) that it is possible to resolve a directed quantity into an infinite set of mutually orthogonal components, the magnitudes of the latter converging, of course, to zero; and (2) that if time is conceived in any way as something which travels, one is inevitably landed in an infinite regress. Dunne accepts the latter and, indeed, bases his theory on an infinite serialism; but it may be that time ought not to be conceived as, in any sense, something which travels, a view to which I should incline.

Whatever may be the validity of Dunne's theory, there remain to be considered the facts which it was designed to explain. Dunne has amassed a good deal of evidence in support of prevision, and this, in conjunction with evidence from other sources, certainly establishes a *prima facie* case for the occurrence of prevision. Prevision should be distinguished from foreknowledge. When, from his computations, an astronomer predicts the occurrence of an eclipse, he may be said to have foreknowledge, that is knowledge *about* the future; but this is not the same thing as if he experienced, in a sleeping or waking 'dream,' a replica of the actual occurrence of the eclipse. It is this latter type of experience which constitutes prevision. Note that I have used the term 'replica.' An event E_1 which is, wholly or partly, a prevision of an event E_2 is not identical with E_2 but resembles it in certain significant respects. For this reason E_1 may also appear in some ways to be 'out of step,' as it were, with adjacent events in the experience of the subject concerned, and with events which would normally be correlated with it in the experience of other subjects.

While, for reasons given in Chapter I, no 'explanation' in a final sense can be given of the occurrence of prevision, any more than of any other fact about the Universe, the question is whether prevision can be regarded as an *intelligible* phenomenon in relation to such facts as we know about the Universe. I see no reason to doubt that it can be so regarded, and I venture to suggest that my theory helps to make it comprehensible. For, on that theory, in any event, or at least in any

minimum group of events, there are inherent the probabilities of all other possible events. It is, therefore, readily conceivable that, in certain circumstances, a subject might have some kind of perception of events at positions in the order of events different from that of the events actually occurring to him. We know that this happens in the case of events situated in the order in the relative position conventionally termed 'past,' through memory images—waking or dreaming—and it should be noted that, in the end, a memory image does no more than establish a probability of the occurrence of the event (though this probability may be very high) of which it is a replica. There seems to be no reason why images of events relatively in the conventional 'future' should not also occur. Perhaps only those of maximum probability will occur, or, on the other hand, we may perceive images corresponding to events of various probabilities but varying in clearness according to the value of the probability. But at present these are only interesting speculations.

Visions of the 'future' will differ in quality from perception of occurring events (though they will be imposed on or mingled with them) just as memory images differ from such events. In some respects they appear to have the quality of dreams, and a word about the latter may therefore be in order here. There have always been two main theories about dreams, one related to vision of the past and future, the other related to the thoughts, emotions, and desires of the dreamer and systematized in modern psycho-analytic theory. I do not think there is any incompatability between the two views, for there may well be two types of dream analogous respectively to perception and imagination, or, better perhaps, to memory and 'free' imagination, in waking life.

One point of interest in this connexion is whether prevision relates only to events which may occur to the subject concerned, or whether it may relate to events which may occur to other subjects though not to him. The empirical evidence in favour of the former appears to be rather stronger than that in favour of the latter. But both may happen, and prevision relating to the experience of others is compatible with my theory, according to which events occurring to one observer establish probabilities, not only of other events occurring to him,

but also of events occurring to other observers under certain conditions.

Before summarizing, there are two other matters to which I wish to refer briefly. The first is that, although for the legitimate purposes of analysis we consider the field to be made up of a continuous series of 'specious presents' and the associated events, this analysis is ultimately artificial. We can completely isolate the various terms of a continuous mathematical series, but we cannot isolate separate events in this way. The field of experience, though complex, has a unity of a type different from the unity of a continuous series of numbers. In fact, the so-called 'continuity' of experience is really unity, a unity without parts having any kind of separate existence. I have drawn attention to this elsewhere.[1] Our analysis is, in fact, conducted through a kind of symbolism, and we must beware of attributing to the object of the analysis any properties which properly belong only to the symbolism; but, with this proviso, we can legitimately interpret the results of our symbolic analysis in terms of actual experience.

The other matter refers to the question of 'duration.' It is frequently said that the so-called sense of duration indicates the 'passage' of something real which we call 'time.' I should demur to this. While the concept of duration *may* play a useful part in the analysis of the object of experience, I should like to emphasize a point I have already mentioned—namely, that close introspection into the sense of 'duration' seems to show that ultimately it is nothing but a sense of 'existence'—and, so far as the object of experience is concerned, to say that an event 'endures' (without reference to the additional and different concept of successive order) seems to me to amount in the end to no more than saying that it 'exists.' I think this is perhaps more obviously true of an event in the sense in which I have used the term.

Restatement in Summary

Before concluding this chapter I will try to give, in summary, an account of my results in what appears now to be a more logical order.

The theory I have put forward may in the first instance be limited

[1] See *Spiritual Pluralism*, pp. 22 ff.

to, or at any rate most simply illustrated by, that realm of the whole field of experience which is investigated by physical science. But it is meant to be extended so as to apply to the whole field.

One object in view was to determine the minimum necessary assumptions about the 'material' world—stated in physical 'laws'—which, if combined with purely mathematical (in this case statistical) principles of an *a priori* character (on the face of it), would suffice to cover, and to render consistent, the results of observation and analysis.

My first principle is that from observation of an event, or of a certain minimum group of events, it is possible to compute the probability (but not to deduce the certainty) of any other possible event. An 'event' is defined as the objective content of an observer's 'specious present.' This is an ultimate, or primary, concept.

The probability of an event is regarded as itself distributed about its maximum value in accordance with the equation $p = e^{-ks}$ based on the normal distribution, or probability, curve, where p is the probability, k is a variable parameter, and s is a variable which takes only positive or zero values.[1]

If, in the case of any given probability curve, k varies (as in fact it does in the present connexion), the form of the distribution will be modified. But if k is large relative to its variations (as it may be in general in the case of 'physical' events) the distribution will approximate closely to the normal.

We may define a 'state' as that which has a probability of occurring as an event. States form a fourfold continuum, and the relative position of a state in the continuum may be regarded as given by four co-ordinates, τ, ξ, η, and ζ. One of these co-ordinates, τ, differs fundamentally from the other three in a manner indicated later.

'Observers' or subjects are not spatio-temporal entities.

In representing diagrammatically the variables of which the probabilities of states (*i.e.*, probabilities of occurring as events) are functions—these variables being the co-ordinates just referred to—the state occurring to the observer as an event is represented as a point O—the 'origin'—whose co-ordinates are all zero.

[1] Remembering that the distribution is normal, relative, not to s, but to $\sqrt{s}$.

The probability, represented by a point $P(\tau, \xi, \eta, \zeta)$, of a state is very nearly of the form $p=e^{-ks}$ (where $s^2=\tau^2+\xi^2+\eta^2+\zeta^2$) if P is near O. k is a function of the co-ordinates of P.

The accurate form of the probability function is $e^{-\int_O^P kds}$ where ds = the general quadratic function of the differentials $d\tau$, $d\xi$, $d\eta$, and $d\zeta$, the coefficients in the functional expression being functions of the co-ordinates; but e^{-ks} is a close approximation to the probability value except at considerable distances from O and in certain special regions of the 'diagram' corresponding to particular portions of the continuum of states.

The point O is regarded as fixed. States are represented by tracks in the diagram. If a track passes through O the associated state occurs to the observer as an event. Changes in the probabilities of states may be pictured as movements of points along the tracks, the probabilities being functions of the co-ordinates of the points.

The probability that a track passing through a point P will follow a certain course to another point Q is $e^{-\int_Q^P kds}$ taken along that course. The track actually followed by a moving point between two positions P and Q is the track of maximum probability, that is the track for which $e^{-\int_Q^P kds}$ is a maximum. This maximum value is called 'the probability of Q relative to P,' the most important instances being the probabilities of various positions relative to O.

Current physical theory can be interpreted in terms of the foregoing theory as follows:

ξ, η, ζ correspond to the conventional space co-ordinates x, y, z being measured respectively in the directions of x, y, z.

τ is distinguished from the conventional time-co-ordinate t, and is measured orthogonally to t (as well as to ξ, η, ζ). τ is called 'true time.'

s and ds correspond respectively to interval and the differential element of interval.

k corresponds to the gauge-factor, which, in the physical theory originated by Weyl, gives rise to what, in classical field-theory, are the electro-magnetic potentials.

Since, in physical theory, $\int kds$ is the expression for 'Action,' my suggested principle of maximum probability (*i.e.*, $e^{-\int_Q^P kds}$ takes a maximum value) transforms into the principle of Least Action—for $\int_Q^P kds$ then takes a minimum value—which is one of the fundamental principles of physics.

On these lines I have tried to show that there is general correspondence between my theory and current physical theory, in particular those portions of the latter which are concerned with special and general relativity and with quantum phenomena, the latter requiring some modification in the character of the probability function very near the origin. The increased deviation of the probability function from the simple form e^{-ks}, as the interval from O increases, corresponds to the fact that a spatio-temporal representation of the fourfold continuum on the basis of exact observation has to be Riemannian, and not Euclidean, in type, while noticeable irregularities in the form of the probability function in certain portions of the continuum, as compared with the simple form e^{-ks}, correspond to the irregularities in the curvature of conceptual physical space-time which, according to general relativity theory, are the basis of the phenomena which constitute what we call a 'gravitational field' in the neighbourhood of 'matter.' Moreover, on my theory, the fundamental physical concepts ψ and h are seen to be related respectively to the probability causal law and the absolute discontinuity between being and non-being.

So much for correspondences. As regards differences, whereas in physical theory the point O, representing the observer, is commonly regarded as moving (the co-ordinate axes travelling with it) and 'coming across' events located throughout the space-time continuum, I regard O as fixed while points move along tracks, representing states, which may or may not pass through O.

In physical theory the direction of the t-axis varies with the movements of O, *i.e.*, with the order of the events which O comes across, and the axes of x, y, z rotate with it. In my theory the axes of $\xi, \eta\ \zeta$ rotate with those of x, y, z, but the axis of τ remains fixed in direction. This is the fundamental distinction between τ and ξ, η, ζ.

The whole of the real field of (τ, ξ, η, ζ) corresponds to the absolute past and future of the field of (t, x, y, z). The 'elsewhere' region of the latter corresponds to imaginary regions in the field of (τ, ξ, η, ζ). It must be remembered, however, that the field of (τ, ξ, η, ζ) is not a kind of space-time, but the field of variables of which probabilities of states are functions, though this field may be theoretically represented by a four-dimensional 'diagram.'

Corresponding to the boundary between absolute past and future in conventional space-time there is a three-dimensional (ξ, η, ζ) section, and τ changes sign as this boundary section is crossed. The 'past' and 'future' of an event is thus regarded, not as other events, but as the field of the probabilities of the state of which the event is the occurrence.*

I venture to offer my theory as a more fundamental conception of the structural basis of experience than is ordinary physical theory, and, although no doubt the two theories could be regarded as alternative descriptions of the same set of facts, I suggest that my theory has the additional advantage of being extensible, in principle, to the *whole* field of experience, though in such an extension the laws describing the variations of k and s would probably be much more complex, though not necessarily undiscoverable, at any rate approximately.

So far as the physical world is concerned, one seems led to the conclusion that the only assumptions necessary in addition to purely mathematical principles are the 'laws' governing the variations of k and s, which are matters for observation, measurement, and experiment. The fourfold nature of the continuum is, perhaps, not an assumption but an epistemological necessity. But in my theory the relations between events, or, rather, between states, are different in kind from the relations *within* events, in particular from those relations termed 'spatial.' I suggest that physical theory has erred in regarding certain relations between different events, or between parts of different events, as identical in kind with the spatial relations perceived within events.

As regards time, I should say that the events occurring to an observer are ordered, and that the order has a 'sense,' sense being a wider, and therefore a more fundamental, conception than temporal

succession as commonly conceived. I do not regard the order, and the sense, of events as anything more than an order and a sense[1]—in particular I should not consider them to be endowed with the special quality of temporality. I interpret this quality in a different sense, as I have endeavoured to show in connexion with the co-ordinate τ, which I have therefore called 'true time.' So far as perception is concerned, I should say that spatial relations are perceived within events, but that the so-called 'duration' of events is nothing but the *existence* of events. The subsistence of an order of events with 'sense' is an ultimate fact, represented in physical analysis by the concept of steadily increasing entropy.

It may well be asked whether a theory of the kind I am advocating renders the Universe, and our thinking about it, any more intelligible. I think that it does in certain important respects. For example, continual argument has centred round the question as to whether unperceived events exist. In the first chapter of this book I have given reasons for believing that no meaning can be attached to the idea of the existence of unperceived events in the same sense as the existence of perceived events. But we are now in a position to say that (so-called) unperceived events exist (or subsist) as probabilities, which I have called 'states,' it being a misnomer to use the term 'event' of something which is not perceived.

Discussion has also raged, ever since man began to philosophize, round the distinction being Being and Becoming, and the relation between them. Becoming is sometimes conceived as a kind of partial existence. I suggest that my theory provides an immediate and, perhaps, an intellectually satisfying interpretation of the distinction between Becoming and Being—namely, that between probability and certainty, while the process of Becoming can be envisaged as increasing probability values of a state which *may* increase to unity, that is issue in certainty or the being of an event, always remembering that the final transition from Non-being to Being is discontinuous.

[1] But, as I have said earlier, I regard the order not as immediately given, but as something symbolic which is necessitated by the limitations of an analysis which inevitably splits up experience, which is actually one and indivisible, into separate parts. In any case, I think that we reach the idea of temporal order, not simply from sensory experience, but from reflection upon the association of the latter with memory images.

I have some hope that, on these lines, it may be possible to achieve an intelligible and satisfying synthesis between such concepts as those of permanence and change, and the static and dynamic aspects of reality, which, in separation by analysis, have given rise to so many difficulties, and even contradictions, and have so far appeared to defy any synthesis with which the mind can rest content.

Perhaps I may be forgiven if I conclude this chapter with a few speculations about the nature of the world in so far as it is revealed through physical science. One of my main contentions is that time, as ordinarily conceived and as employed in Physics, is not anything real, but a fiction convenient for analysis, and that when, in our equations, we multiply anything by time (which is, in effect, using time in the sense of duration) we are merely endowing that thing conceptually with existence. I believe that this view is supported by the discovery of quantum phenomena. For whereas classical physics tended in the end to the theory that energy was the fundamental stuff of at any rate the physical world, we are now coming to hold that the fundamental stuff is not energy, but action. I think we should do right to be strongly influenced in this by the fact that Nature itself discloses an absolute unit of action—the quantum. Now a quantum of action is not something which exists during a period of time; it is simply something which exists. It is not in time—on the contrary, time, as a convenient analytic concept, is in it. Logically we should start with action, and the given fundamental and universal unit which is associated with it. We should then define a convenient unit of energy, and stick to it as a fundamental unit. The unit of time will then be the remaining analytic factor combined with the unit of energy in a quantum of action. We should thus have: Unit of action (quantum) = unit of energy × unit of time. Now the quantum is something given independently of any choice by us, and once the unit of energy is fixed we have the unit of time also fixed. Hence, as action only exists in integral numbers of quanta, time can only occur in the units we have arrived at; and multiplication by this unit of time is equivalent to operation by an existence operator whose only values are 0 and 1.

But it may be pointed out that we might multiply by (say) n units of time, where n is any positive integer. This is not, however, a

correct way of putting the matter. What, in fact, we should really be doing is multiplying the unit of energy in each of n quanta of action by the unit of time, or, more correctly, by the existence operator. We should be applying the latter n times, but to the 'n' *separate units of energy* associated with the n quanta. Hence, wherever the idea of time is employed, it is really only employed, in the final analysis, as an existence operator, which may take one of the two values 0 or 1, but which is exactly the same in nature on every occasion.

On the other hand, as I have tried to show, when the idea of time is employed in relation to succession it amounts to no more than registering the perceived fact that events have an order which has a 'sense.' This 'conventional' time must be distinguished from, though it is related to, 'true' time (τ), which can be interpreted in a different way.

Does it follow from the foregoing that the ultimate stuff of the physical world is discrete? Not necessarily, I think. As I have interpreted it, the occurrence of the quantum h in the analysis of observations of physical fact is the expression, not of a discreteness of 'events' or of 'material particles,' but of the absolute discontinuity between being and non-being; and, like the fourfoldness of the continuum (which arises ultimately from the fact that a minimum of four 'terms' are necessary for comparison of relations), it ought perhaps to be regarded as an epistemological necessity. The associated value of the probability function is e^{-h}, and, as probabilities are combined by multiplication, wherever a quantity nh occurs in the analysis, n will necessarily be an integer. But it seems to me that this need not be incompatible with the continuity of physical stuff in the concrete, for an event which may be regarded *analytically* as the confluence of a number of events is not a mere discrete addition of these events. Thus an event which is a percept of (say) the absorption of two quanta is not the discrete addition of an event which is a percept of the absorption of one quantum to an event which is a percept of the absorption of the other. But the matter requires further consideration.

I find theoretical speculations of this kind attractive, but this is not the place to pursue them further, and we must now return to the main inquiry.

CHAPTER IV

Immortality, Freedom, and Moral Responsibility

THERE ARE TWO TRADITIONAL PHILOSOPHIC PROBLEMS WHICH ARE related to the question of the nature of Time, the one directly and the other indirectly. They are, respectively, the problems of Immortality and Freedom, or, as the latter has commonly (but not very accurately) been called, Free Will. Consideration of the second problem leads on naturally to the subject of Moral Responsibility, a vexed question which I shall also discuss in this chapter.

In the last chapter I put forward a number of propositions, some in the nature of primary assumptions, others in the nature of conclusions which seemed to follow from these assumptions. Among these propositions there are some which are specially relevant to our present purpose. They are as follows:

(1) Subjects of experience are not spatio-temporal entities.

(2) The content of the experience of an individual subject—the so-called 'object of experience'—is essentially a unity, but in so far as, for the purposes of conceptual thought directed to its structure, it is analysed into 'events,' there is perceived in it something which appears in the analysis as an order among the events (the latter forming a continuous series), an order which has a definite 'sense.' This order is the basis of the conventional conception of time, which has, however, gathered to itself additional associations not strictly or necessarily predicable of events and the relations between them. In particular, 'duration' does not really amount to anything more than existence. I should add, *à propos* of the first sentence of this paragraph, that I see no contradiction in the idea of a unity which has a structure.

(3) From a given event, or events, it is not possible to infer other events, but only the probabilities of such events. The principles

determining the values of these probabilities are described, generally indirectly and implicitly, but rarely directly and explicitly, in the 'laws' discovered by the various sciences.

The first two propositions evidently have a special bearing on the question of Immortality, to a consideration of which I shall now turn.

Immortality

I have dealt at some length with the problem of Immortality elsewhere.[1] My views are still substantially expressed by what I wrote there, but I should now be inclined to modify somewhat the manner of their presentation.

To the ordinary man the question "Am I immortal?" means, in effect, "Do I exist for ever?" where the phrase 'for ever' implies the conventional conception of time which is current in everyday thought and, indeed, in a good deal of philosophical and scientific thinking. This conception is a kind of (rather confused) blend of the idea of something which continually 'flows' or 'passes,' and the idea of something 'in' which we exist and in terms of which the order of events in our experience is determined.

In the last chapter I have analysed the concept of time as it appears in ordinary thought and also in scientific theory. I have tried to show that, whatever may be the analytic convenience of the concept, it does not represent anything which really exists in itself, though it may be interpreted in terms of a certain type of relations ('temporal') which subsist *within* the individual object of experience. Moreover, as I have pointed out, even if we take this interpretation at its face-value, neither the individual subject of experience nor, indeed, the object, *considered as a whole*, in which his experience consists, are temporal entities. These views are by no means novel, but I have given additional reasons in support of them.

It follows from the foregoing that any question of the form "Do I exist for ever?" is meaningless, for the 'I' is a type of entity to which the temporal implications of 'for ever' are not applicable. But it is not a necessary consequence of this that no significance whatever can be

[1] In *Spiritual Pluralism*, chapter vi.

given to what people have in mind (no doubt in a vague and confused way) when they talk about Immortality. But we must cease to put the question in terms of time, and consider rather what is the *kind* of experience connoted by this somewhat obscure idea of Immortality.

I had better say at this point that I shall not feel it necessary to apologize for using temporal terminology in some connexions. Our whole vocabulary and way of thinking are so shot through with temporal ideas (which, as we have seen, have their proper place in analysis) that to translate continually into the more accurate non-temporal terms would on occasions involve intolerable circumlocution.

I suppose the chief concern of the individual when he considers the question of Immortality is really whether his experience includes events—what he calls 'future' events—of a kind radically different in certain important respects from the events which constitute his 'present' experience. These events, if they exist at all, occur after the event which is, for him, bodily death. It does not seem possible, from consideration of the events of this life within the experience of an individual, to adduce *logical* reasons either for or against the occurrence within that experience of events of a kind which might constitute a 'future life.' Whether there are reasons, other than strictly logical ones, which might justifiably be considered to throw some light on the matter we shall consider later in another connexion. But here we may next inquire whether there are any features apparent in the relations between the experience of different individuals, as distinct from relations within one experience, which bear on the question.

For other people, the death of an individual consists of certain events which include perceptions of his body of a particular kind—namely, the disappearance of all expression and mobility, and eventual disintegration. It is clearly not possible to determine directly whether these events have any correlates in the experience of the subject whose body is dead, and for empirical evidence on survival (as distinct from logical or ethical reasons) we can only have recourse to an investigation of the field of so-called abnormal 'psychic' or 'spiritualistic' phenomena.[1]

Everyone is aware of the furious controversy which has long raged

[1] Cf. *Spiritual Pluralism*, chapter viii.

round the question of the genuineness of these phenomena. The whole issue is extremely confused, and there has been much loose thinking and prejudiced argument on both sides. It is not uncommon, indeed, for professional scientists to abandon all the canons of scientific investigation and reasoning, which normally they abide by very strictly, when they deal with this question. This is unfortunate, for clearly the phenomena are not *a priori* impossible—indeed, to talk, as some have done, about any *phenomena* as being *a priori* impossible is really meaningless—and the only way to settle the question is by scientific inquiry, conducted by the methods accepted in the established sciences, of a most exact and rigorous kind.

The most lucid and exhaustive analysis of the whole matter with which I am acquainted is that given by C. D. Broad in *The Mind and Its Place in Nature.*[1] After discussing the evidence for the alleged facts, and considering all the possible types of theory which might be advanced to cover the residue which can hardly be dismissed by the common explanations in terms of error, stupidity, or fraud, Broad comes to the conclusion that the hypothesis which, perhaps, on balance, meets the situation best, is what he calls the 'Compound Theory.' I should like to consider this, but before doing so it is necessary to discuss briefly a more general theory which is involved in the Compound Theory—namely, the theory of what is called 'Emergence' or 'Emergent Characteristics.'

The Theory of Emergence has gained a wide vogue during the last twenty years or so. It is produced in many connexions and as an answer to many difficulties—indeed, in the minds of some people, it almost appears to rank as a kind of 'philosopher's stone.' Baldly and abstractly it can be stated somewhat as follows: "Some of the properties of a whole consisting of parts A, B, C . . . standing in a certain multiple relation R to one another, are in certain cases such as cannot possibly be deduced from even complete knowledge of the properties of A, B, C . . . when each is considered in isolation from the others or as parts of wholes not of the same form as the whole in question.' The properties in question of the whole are the 'emergent characteristics.' They 'emerge' when A, B, C . . . are brought into the relation R.

[1] See chapter xii of that work.

An example of this which is frequently quoted, and well illustrates the principle, is the combination of hydrogen and oxygen to form water. A mass of water has certain properties which cannot be deduced from the properties of the mass of hydrogen and the mass of oxygen which are its constituents, whether these are considered in isolation or in other types of combination. Many other illustrations can be drawn from various fields, but I think the one I have given will make the matter sufficiently clear.

I have never been able to understand the comparative popularity of this theory, for it does not seem to me to get us any farther at all. Indeed, I suggest that it amounts to no more than a restatement of the facts. For example, an instance in which the theory has sometimes been called in to help is in connexion with the difficulty some people feel regarding the appearance of mind in the evolutionary process. Taking the ordinary conceptions of mind and matter, it is held to be difficult or impossible to see how a process which had up to a certain point exhibited properties which were purely material in character should, at that point, begin to exhibit properties, of the kind called 'mental,' entirely incongruous with anything that had gone before. Recourse is therefore had to the Theory of Emergence and it is said that, when material configurations reach a certain degree of 'complexity,' they exhibit emergent characteristics (as defined already) which are quite different, and could not be deduced, from the properties of matter, these new characteristics being of the kind we call 'mental.' Much comfort seems to be derived from this, but I think it is fairly obvious that it really sheds no additional light on the problem, and is, indeed, nothing but a restatement of the supposed facts with a somewhat different terminology. I feel that to put forward the theory of Emergence is simply equivalent to saying that the facts under consideration are ultimate ones which cannot be any further 'explained.'

The 'Compound Theory' of mind postulates that mind is a combination or compound whole made up of two constituents—namely, a bodily factor and what Broad calls a 'psychic factor.' The characteristic qualities of mind are emergents from this combination—they appear only when the two factors combine, and they cannot be deduced from the properties of the factors considered separately.

After a penetrating survey of the evidence afforded by abnormal psychic phenomena Broad comes to the conclusion that they point to the 'persistence' of psychic factors as a possibility, but give little or no ground for a belief in the 'survival' of minds. I will examine the Compound Theory briefly, and the conclusion which Broad thus derives from it.

I would first point out that, in so far as the Theory of Emergence is involved in the Compound Theory, the latter is open to the general criticisms which I have urged against the former. Here, as elsewhere, the idea of Emergence is of no real help, and we can only say that the appearance of 'mental' characteristics when the psychic factor combines with the bodily factor is an ultimate fact. I think Broad would accept this, and so I can see no reason for dragging in the Theory of Emergence at all.

As regards the bodily factor, I am not quite sure whether Broad identifies this with the whole body, as ordinarily understood, or with particular parts of it such as the brain, nervous system, and sense-organs, but his general usage seems to be to identify the bodily factor with the whole body. In any case, the point is of little importance in a general discussion of the theory.

The nature of the psychic factor, judging by Broad's remarks about it, is obscure, to say the least of it. Broad would not in any case dignify it with the term 'survival,' which he (no doubt rightly) would take to imply the further existence of something like the full personality, with a continuous stream of consciousness and fundamental memory patterns. The psychic factor may be said to 'persist,' but the fragmentary, trivial, and disconnected nature of its manifestations in mediumistic phenomena would seem to indicate a feeble and flickering type of entity. On the evidence, Broad believes[1] that it must carry traces of the experience of the mind of which it was a constituent, and that it *may* have some of the lower factors, but is very unlikely to have any of the higher factors, of mentality. Indeed, if it possessed the higher factors in any marked degree, I think it would be difficult to distinguish it from a genuine 'mind.'

In any case, a serious difficulty seems to me to arise at this point.

[1] *Op. cit.*, 539 ff., 651.

For when the psychic factor is associated with a body during ordinary life there are manifested all the characteristic qualities of mind. But in mediumistic phenomena the psychic factor is also associated with a body, namely that of the medium. Why, then, are the manifestations so inferior, and not characterized by the full range of mental qualities? The only possible reasons that could be advanced for this are, I think, either that it is due to the nature of the relations between 'this' world and 'the next' (or to differences in the circumstances of the two worlds), or that it is due to the fact that the psychic factor is associated with an alien body instead of with its own original body. But if this be admitted it seems to me that the theory collapses, for the peculiar nature of the phenomena may therefore be due to the nature, not of the psychic factor (of which we have no *direct* knowledge), but of the other conditioning factors in the case. The psychic factor thus seems to degenerate into a mere unknown X, which, for all we know, might really be a complete and personal mind.

But let us for the moment assume that the psychic factor is actually a fragmentary and inferior entity of the kind required by the theory. Now consider the other partner, the bodily factor, when it is separated from the psychic factor—*i.e.*, when it is inanimate. The properties of an inanimate body are inchoate, ineffective, and transitory. Hence, apart from the reasons I have given for regarding the Theory of Emergence as philosophically futile, it is placing a particularly heavy burden on that long-suffering theory to suppose that two factors—the bodily and the psychic—which, when separated, are so very feeble and inferior, should, in association, exhibit the remarkable sweep of quality and power of which such factors as, for example, intellect and creative artistic ability are capable.

I cannot help feeling that the shortcomings of the Compound Theory are due, at least in part, to the fact that it seems to approach the problem (at any rate so far as the bodily side is concerned) from a standpoint which is reminiscent of the old type of Dualism. The body seems to be regarded as a collection of matter (an organized collection, it is true) conceived in the traditional style. But critical analysis of the concept of matter paints a very different picture. A piece of matter is a group of events, or partial events, which include

sense-data. In particular, a human body is such a group, though it is distinguished by the fact that, for the 'owner' of the body, it includes some events of a type different from, though others similar to, the events which *to him* constitute anyone else's body or any other piece of matter. Nevertheless, the body is a group of events forming part of the experience both of the person concerned and of other people. It is therefore incorrect to speak of association between a psychic factor (or a mind) and a body (or bodily factor) envisaged as some separate entity conventionally material in type. What we really have is a certain kind of experience—namely, what is known as 'bodily life.' In fact here, as always, we must base our analysis on experience as it really is, taking as our primary factors the experiencing subject and the content of his experience. I will approach the reconsideration of the problem from this point of view through the discussion of a theory of the relation of mind and body, and its bearing on survival, which Broad seems to regard as the only serious rival of the Compound Theory, though he discards it for reasons which I will mention.

Broad calls this alternative theory the "Instrumental Theory." [1] Briefly, this theory asserts that the 'mind' is existentially independent of the 'body,' but that, during 'bodily life,' it is associated with a body in such a way that its activities (whether cognitive or conative) and feelings are limited or determined in certain ways by the body and are affected by changes in, or injuries to, the latter. Nevertheless, the mind may exist apart from its present body. Broad admits that this theory is consistent with many of the facts commonly supposed to involve existential dependence of mind on body, but he quotes two facts which seem to him to render the theory untenable: The first is that certain injuries to the body (in particular to the brain) may render impossible the recollection of certain events. The second is that certain other injuries to the body may profoundly change the *character* of the person in question, as manifested in his behaviour. Broad's consideration of these facts leads him to conclude that they can only be squared with the Instrumental Theory by 'reducing' the mind to something which has 'merely' certain very general capacities, any particular exercise of these powers seeming to depend on the

[1] *Op cit.*, pp. 533 ff.

body, so that what is left is so abstract and indefinite that it does not deserve to be called a 'mind.'

These criticisms of the Instrumental Theory seem to me to be very unconvincing. I will first meet them on their own ground by suggesting that, even if we take them at their face value, the conclusion drawn from them (as stated at the end of the last paragraph) is in no way devastating, or, indeed, derogatory to mind. For it seems clear that the *particular exercise* of the activity of any entity which can be appropriately described as 'active' must always be determined in part by something other than the entity—namely, the particular circumstances (exclusive of the entity itself) in which the activity takes place. Activity *in vacuo* seems meaningless—it must always be activity directed to, or in relation to, something. Let me, for example, consider bodily activity. Even if we exclude the influence of the mind, and consider only the effect of material factors, there seems no objection to regarding the body as having (say) a general capacity for running, though the particular way in which this capacity is exercised will, and must, always depend in part on the particular material conditions. At a somewhat higher level, take the bodily aspect of an activity such as painting. We may regard the body (or parts of it) as having a general capacity for painting, though the particular way in which this capacity is exercised will depend in part on such material conditions as the nature of the medium and the nature of the 'canvas.' Nevertheless, the power to run or to paint does not depend merely on particular material conditions, and the fact that general bodily powers can only be exercised in ways limited by particular 'external' conditions does not 'reduce' the body to an inferior status or render it so 'abstract' or 'indefinite' that it does not deserve to be called a 'body.' We could only be accused of abstractions and indefiniteness if we were to assert that general powers of activity could be exercised sometimes in a general sort of way (*in vacuo*, as it were) without being limited or determined in any way by conditions apart from the active entity. But it is unlikely that anyone would assert this, and the Instrumental Theory certainly does not require it.

In the field of mind itself, one of the main tendencies of modern psychology has been to describe individual minds in terms of certain

general powers or capacities, though it is of course realized that these powers are only manifested in action in particular circumstances, one of which is the condition of the body associated with the mind concerned. Whenever, for example, we assign an intelligence quotient or other analogous measure to an individual we are describing the degree in which he possesses a general power, though the manner and effectiveness of the particular manifestations of this power will depend on the special circumstances. In cases of bodily illness, for example, the efficiency of intelligence will be impaired; but the difference between a clever and a stupid person is a matter of general capacity and not of the limitations of this capacity by the special conditions which partly determine the way in which it is exercised. No doubt a behaviourist or a materialist would maintain that intelligence is a purely bodily function. I believe that behaviourism and materialism can be refuted,[1] but here I am only concerned to show that the ascribing of general powers to a mind which is existentially independent of the body, though the particular exercise of those powers is in fact limited by the body, is not incompatible with the facts and does not reduce the mind to an inferior kind of abstraction.

Let us now look rather more closely at the two particular instances cited by Broad as fatal to the Instrumental Theory. The first is the fact that injury to the brain may make it impossible to recollect certain past events. Now, memory, in the sense of recollection here used, is a form of subjective activity, and it certainly seems to follow from the observed facts that the exercise of this activity in particular instances is partly dependent, during bodily life, on bodily conditions, and may be rendered impossible to an indefinite extent when such conditions are abnormal. But I cannot see that it follows that the mind is existentially dependent on the body. As a rather crude analogy I consider the case of a man fastened to a machine which only enables him to move in certain ways, while, if anything goes wrong with the machine, even these ways (or some of them) may be blocked. Nevertheless, the man and his body are not existentially dependent on the machine, and, if he were freed altogether from the restraint of the latter, he would not

[1] Cf. my paper on "The New Materialism" in *Proceedings of the Aristotelian Society*, 1920–21.

only recover power of movement but the range of his power would be extended. It is true that this example refers to bodily activity, but I see no reason why the analogy should not be extended to mental activity, especially as brain injury sometimes results in restriction of physical activity, as in paralysis, and sometimes in restriction of mental activity. In neither case does it seem to me to follow that the mind is existentially dependent on the body, or vice versa, but only that, during bodily life, their respective activities are closely linked and interdependent. The case for existential dependence of mind or body could, I think, only be sustained at all if it could be shown that bodily changes sometimes produce mental changes such that the being concerned can *in no sense* be said to be the same subject. But that brings us to the second fact mentioned by Broad.

It is, of course, true that bodily changes or bodily injuries may profoundly alter the 'character' of the person concerned as manifested in his behaviour. But I do not see how this can properly be urged in support of a belief in the *existential* dependence of mind on body unless it can be shown that, in some cases at any rate, the alterations are so complete that there is no sense in which the activities of the mind in question can be regarded as activities of the same individual as before. We should have, in fact, to show that there was a *complete* breach of continuity in the subject, so that, neither for himself nor for anyone else, could he be regarded as recognizably identical with the former subject. But I submit that the evidence falls very far short of this. It is true, as Broad points out, that an injury may change a cheerful and benevolent disposition into one which is morose and even malignant, and that it is accordingly clear that the injury has made a considerable difference to the mind. But nobody disputes that people may change, and change greatly, through all kinds of causes. It is, however, a long step from this to the complete destruction or disappearance of an individual mind through injury to the body or through bodily death. Indeed, introspection of persons who have suffered such morbid changes through ill-health or for other reasons provides some evidence that there is always some central core of individuality, as it were, which remains intact and is aware of what is happening—which realizes the nature of the changes which have

taken place in the feelings and behaviour of the mind-body organism with which it is associated, but is temporarily powerless to resist the impulses which give rise to this behaviour. Moreover 'recovery' quite frequently takes place, with reversion to the original disposition and type of behaviour.

In brief, then, I cannot see that the observed facts provide any real evidence of the existential dependence of mind on body, though they give ample evidence of the effect—sometimes profound—of bodily conditions on the mind. But the mind may well retain intact that which constitutes its essential character as an individual existent, and, when association with the body is broken at death, it may be able to develop more fully the potentialities inherent in it.

I do not, however, hold any brief for the Instrumental Theory in the rather crude form which I have been discussing; but it presents some analogy with the theory which I advocate, and which I will now outline. But I would first point out that it is really rather unfortunate that the terms 'mind' and 'matter,' 'mentality' and 'materiality,' cannot be dropped from philosophical discussion, for they are extremely ambiguous, and are used by different people in different ways. Moreover, although it is now fairly generally realized that the supposed fundamental dualism of Mind and Matter is a false one, the influence of this traditional belief still lingers on and tends to insinuate itself imperceptibly into current discussions and to affect the conclusions reached from these, implicitly if not explicitly.

I will approach the issues involved by considering the following three statements:

(1) There is a red patch.
(2) There is a perception of a red patch.
(3) I perceive a red patch.

Although for convenience I have used the term 'perception,' I am really concerned here only with 'sensation'—the sensing of sense-data—and not with the additional beliefs, associations, and so on which are included in perception. I have taken sensation because it is here that we have contact with the 'external' world.

The above three statements all have a fairly definite meaning for

me without detailed analysis, and I imagine that they would also have a practical meaning for most people; but no two of the three meanings are identical with one another. At one time it was common to describe as "mental" not only the 'I' and the act of perception, but also the sense-datum (the red patch in this case), external reality being regarded as something (*e.g.*, the material waves and particles of physics) which 'caused' the sensation of which the sense-datum was regarded as an integral part. But this naïve view no longer holds the field. Matter and material bodies are now seen to consist of groups of sense-data, or events which involve sense-data, the principles of physical science being highly condensed and generalized descriptions of the nature of these events—*i.e.*, of their structure and interrelations. But one influential school of thought has gone farther and maintained, not only that the sensation *is* simply the sense-datum, and contains no constituent (such as an act of sensing or a being which senses) except the latter, but that mind and all mental factors are really nothing but groups of sense-data, or, perhaps, sense-data and images. This view derives largely from the theory, held by Mach and William James, that the world consists of 'neutral' particulars, which, when grouped in one way, constitute the phenomena called 'material,' and, when grouped in another way, constitute the phenomena called 'mental.'

Now, in common with most philosophers, I should accept the view that matter is really a construction from sensory events, and that, in however disguised a form, physical science deals with nothing but these events and their interrelations. But I cannot believe that 'mind' also is nothing but a construction (though a different one) from such events, even if the latter be extended to include such things as feelings, desires, and beliefs which are regarded by the more drastic exponents of the view we are considering as themselves including nothing but sensory events. I suggest that this view of the nature of 'mind' can be reached only by ignoring certain facts which are fundamental—indeed probably ultimate.

Our three statements certainly seem to imply, as they stand, that there is in perception, in addition to what is perceived, an act and a being which acts (in this case, perceives), and no doubt most people accept this implication. But the theory we are considering (which is

sometimes called 'Realism' and sometimes 'Neutral Monism,' the latter being the Mach-James-Russell form of Realism) denies this. I have searched through the arguments supporting this denial, and all they seem to amount to in the end is the assertion that the subject and its activity are not 'observed' or 'discovered' or 'disclosed.' I should not dispute this for if the subject exists it cannot from the very nature of the case observe itself in the sense that the term 'observe' is here used. The subject cannot observe itself as the patch of red is observed, any more than (to quote a partial analogy) an eye can see itself, nor can it be observed by anyone else. A subject is not, in fact, a type of entity to which the idea of being observed has any significant application. It observes, but it is not, and cannot be, observed.

So far, however, I have only shown that the fact that the subject is not observed does not *disprove* its existence. But this does not get us very far by itself. We require positive evidence of the existence of the subject. I believe we have such evidence in the form of immediate awareness of our own existence as subjects, and not merely as collections of sensations, images, feelings, etc. I know that Russell and the Realists would deny this awareness, and that the issue is clearly an ultimate one; but I believe that a probable reason for the belief that the irresistible sense of one's existence as a real unitary entity, acting in various ways, is nothing but an illusion, arises from an epistemological error. I venture to suggest that this error is the belief that knowledge about anything has, and can have, one of two sources only—namely, acquaintance (as in the case of sense-data) and direct apprehension of logical truths. But I believe there is a third source of knowledge about a thing—namely, if you yourself *are* that thing, and I have called this source of knowledge 'realization.' [1] It is just as ultimate as acquaintance or apprehension of logical truths.

The reasons for and against the existence of the subject are clearly final in character, and cannot be argued further. But I maintain that acceptance of the subject's existence as an ultimate fact greatly simplifies the philosophical problem and makes possible a more intelligible account of reality than would otherwise be possible. I have never been able to understand the assiduous (and, to me, mistaken) ingenuity

[1] Cf. *Spiritual Pluralism*, pp. 13 f.

which is so often displayed in trying to render the assumption of the existence of the subject unnecessary, though I sometimes have an uneasy feeling that it is linked with the historical connexion of the idea of 'subject' with that of 'soul,' the latter having religious associations which do not commend themselves to the philosophers in question.

As I have already said in other connexions, I take the existence of the active subject, then, to be an ultimate fact. Indeed, for reasons given in the first chapter, I regard subjects, as they have being-for-self, as the only type of entity to which *substantial* existence can properly be attributed. If, then, we are right in assuming that in sensation we are somehow in touch with a reality other than ourselves (and without such an assumption we can get no farther) the hypothesis which suggests itself is that this reality is made up of subjects, and that sensation is the way in which we experience our interaction with the latter, or the way in which the latter appear or manifest themselves to us. This is the fundamental metaphysical hypothesis on which my general argument is based, and it must be carefully distinguished from the hypotheses of physical science regarding the nature of 'matter' which, as we have seen, are really tentative generalized descriptions of the sensory content of experience, and are stated in terms of concepts which are constructions of sensory events, and do not, as was formerly thought, refer to realities different from these events but of which the latter are the appearance or the effect.

It is clear that the group of subjects which constitute a bodily organism will have a special relation to the subject commonly termed the 'mind' of the organism in question. I have dealt fully with the nature of this relation elsewhere.[1] Briefly, it is twofold, for whereas the subject perceives his body, or parts of it, objectively in the same way as he perceives other bodies, he has to it a peculiar and more intimate relation (realized particularly in perception and in volition) of a kind which does not subsist between him and other material bodies. I have called this relation 'immanence,' and I do not think it can be analysed or described—its nature is not something which is objectified, but something which we *realize* directly, much as we realize our own existence.

[1] Cf. *Spiritual Pluralism*, chapter vii.

I am aware that the theory of reality which I have been applying to the mind-body relation is of the type which Broad calls 'silly'—*i.e.*, a theory which may be held when talking or writing professionally, but which "only an inmate of a lunatic asylum would think of carrying into daily life." [1] But I do not think this imputation need be treated seriously, for it applies more or less to any theory or belief which goes beyond the non-reflective stage. It is no doubt true, as Broad points out, that people do not in practice regard an armchair as being a group of spirits, but neither do they regard it (for instance) as made up almost entirely of empty space, with minute electric charges scattered very sparsely within this space, or, alternatively, as a kind of undulatory distribution of the probability of something being there, though modern science views it in this sort of way.

It will be seen that the theory of the relation between the subject and his body which I advocate is analogous in some ways to the Instrumental Theory, for the subject, or (to use the Leibnizian term) 'dominant monad,' acts upon, and is acted upon by, the 'external' world through the organized group of 'subordinate monads' or subjects which constitute the body; and, in the experience which we call 'bodily life,' the activity of the dominant subject is in part determined and limited by its intimate association with the subordinate subjects. But there is no reason at all to suppose that the dominant subject is incapable of activity except in such an association—indeed, as I have already remarked, with the breaking of the association at death it is possible that the new conditions may lead to a wider and freer development of activity. It may be asked, therefore, whether there is any purpose discernible in the mind-body relationship at all, but as I have dealt with this question in some detail elsewhere,[2] I shall not pursue it here.

As the subject is a unitary entity, it must survive as such if there is any survival after death at all, and not in the form of a partial and fragmentary being like the 'psychic factor' postulated by Broad, and all the evidence cited in support of the persistence of the psychic factor may equally be taken as evidence of the survival of the subject, the

[1] Cf. *The Mind and its Place in Nature* (Kegan Paul), pp. 5 f.
[2] *Spiritual Pluralism*, pp. 207 ff.

peculiar and (in some ways) trivial nature of the evidence being due, perhaps, to the nature of the conditions which make possible any evidence at all, and of which we have insufficient knowledge.

We might summarize briefly by saying that any statement of the problem of Immortality in terms of time is not significant, as the subject is a non-temporal entity. On the other hand, if we eliminate the traditional association and contrast of the term 'Immortality' with the idea of time, we can only assign the term arbitrarily (if we retain it at all) as the name of some particular characteristic of the existence of the individual or of his relations with the rest of the Universe. But in considering the problem of the survival of bodily death what we are really concerned with is whether there are to be found in the experience of 'living' people elements which might be considered to correlate with elements in the experience of people who are 'dead' so far as their bodies are concerned. It is here that the empirical evidence supplied by psychical research becomes relevant, and we can say that critical analysis leads to the conclusion that some of this evidence indicates the possibility of survival and can probably be most satisfactorily explained by the hypothesis of survival. There I will leave the matter for the moment, but I shall return to it later in another connexion. Meanwhile I will pass on to consider the problem of Freedom.

Freedom

There seems little doubt that a great deal of the argument which has taken place regarding Freedom has been argument about nothing but the meaning of words. This is quite common, and often, indeed, necessary, in philosophical discussion, and no harm results, providing it is clearly understood that the argument is about the meaning of words and cannot of itself yield conclusions about anything else. But in the discussion of freedom the meaning of words has played an unusually large part, and this has not always been fully realized. We must therefore decide what meaning we are going to give to the term 'freedom' in relation to the activity of individuals.

Broadly speaking, there appear to be four possibilities in this

connexion—namely, that the behaviour of an individual is determined by:

(*a*) Nothing at all; *or*

(*b*) The essential attributes of the individual himself; *or*

(*c*) Factors which are not attributes of the individual—which are, so to speak, 'external' to him; *or*

(*d*) A combination of (*b*) and (*c*).

I am doubtful whether any meaning can be given to (*a*); but, if any significance can be attached to it, it would imply a completely chaotic world, in which any kind of ordered existence, such as we actually experience, would be impossible. Indeed, the idea of such complete indeterminacy is perhaps incompatible with the idea of existence. In any case it need only be mentioned in order to dismiss it.

As regards (*b*), there seems no reason to believe that the behaviour of an individual is determined entirely by his own nature, and there is much evidence to the contrary. Nothing seems more obvious than that our actions are influenced and restricted to a considerable extent by factors which are largely independent of us, the most striking example being the effect of physical restraints of various kinds.

But it seems equally obvious that our actions are not *entirely* determined by factors external to us, and two different individuals will act in different ways in what appear to be practically identical situations. I am aware that there is some ambiguity here in connexion with what is included in the nature, or the 'essential attributes,' of the individual, as distinct from 'external' factors. For example, is the body of the individual to be regarded as part of the external factors or not? I shall so regard it, for what I am concerned with is the freedom of the subject as an individual distinct from his body, and, in so far as the subject's activity is limited by his bodily conditions, I should regard him as, to that extent, not 'free,' and I imagine that such a view would be commonly held. But I do not think the point is a fundamental one, for it seems reasonably clear that however exactly we draw the boundary between the attributes of the individual and external factors, it is not possible to demonstrate that the individual's behaviour is determined solely by the latter, nor to support a belief in such a possibility by evidence based on actual experience.

I conclude, therefore, that we must accept (*d*) as being most in accordance with the observed facts—that is, that the actions of an individual are determined partly by his own nature, or by what may properly be called his essential attributes, and partly by factors which are not in any sense part of the nature of the individual in question. Now I suggest that if a subject's behaviour (which will be partly manifested through his body) is determined, at least to some extent, by his own nature, then he may rightly be regarded as 'free,' though not, of course, completely free. At first sight this may look like an attempt to solve the problem merely by definition, but I do not think an objection on this ground would be well-founded. For I do not see how, if we rule out complete indeterminacy (which leads nowhere), we can think of freedom as anything other than self-determination; and to assert, as some appear to do (at least by implication), that, because the self is *determinate*, therefore it cannot be free, seems to me, as I have argued elsewhere,[1] to confuse 'determinate' (*i.e.*, having a definite nature) with 'determined'—*i.e.*, controlled by external factors.

I have avoided the use of the term 'free will' in this discussion, as the introduction of the notion of 'will,' though hallowed by tradition, adds an unnecessary complication in the way of psychological analysis, without really effecting the nature of the problem in any way. But it is interesting to note that, in the longstanding contest of "Free Will versus Determinism," the idea of determinism has been commonly associated with that of predictability. This has been mainly due to the influence of scientific theories about the nature of the physical world. Until comparatively recently the latter was supposed to be governed by principles or 'Laws' such that, given certain data about its condition in a limited spatio-temporal region, it was possible to deduce its condition in any other such region, 'past' or 'future.' But recent developments in physical science have greatly weakened, if they have not altogether destroyed, the force of any analogy, in support of determinism, between the physical world and the Universe in general. It now seems likely that the order and regularity which are found possible in collating our observations of the physical world are

[1] *Cf. The Supremacy of Spirit* (Kegan Paul, 1922), pp. 87 f.

due, not to causal determinism of the traditional type, but to the statistical consequences of the operation of a large number of factors, the principles (if there are any) in accordance with which this operation takes place being unknown. I have used the general term 'factors' to avoid any implication which the present state of our knowledge does not warrant; but, roughly speaking, current physics would no doubt regard these factors as consisting in the behaviour of such things as electrons, photons, and quanta. If, as we must, we regard the ultimate entities of physics as really being groups of events, we find that there is a lack of correlation among these groups, so that the aggregates of them, which we observe, exhibit behaviour in accordance with statistical principles of a 'probability' type. I have developed this theme in the last chapter.

It is evident, then, that arguments in favour of universal determinism can no longer be supported by illustration from the physical world. But, apart from this, it is of some interest to consider the relation between determinism and predictability, especially in connexion with human behaviour, or, indeed, subjective behaviour at any level. There are really two questions involved. The first is whether, if a person's behaviour is determined partly by his own nature, we ought to regard him as not free if we have so thorough a knowledge of his nature that we can deduce accurately what his behaviour will be in any given situation. This means, in effect, that the observations we have made of his behaviour in a limited number of situations are found to be an infallible guide to his behaviour in any situation. Even if such complete knowledge of an individual be theoretically possible (and I shall shortly give reasons for doubting this), I do not think we should be justified in regarding him as not free if his behaviour were not entirely determined by factors other than himself. That a man acts in such and such a way in such and such circumstances because that is the kind of man he is, does not mean that he is not free.

But is it possible, even theoretically, to have the complete knowledge about an individual which is necessary for accurate prediction of the kind we have been discussing? This is the second question involved here. Certainly the behaviour of some people and (to some extent) of all people is so much a matter of routine and habitual

reaction that we can usually tell how they will behave in a given situation. But the *possibility* of surprise is always there, even when the elements of the situation are fully known. I believe the reason for this is that in the nature of every individual existent there is something unique. I do not think it is possible to describe an individual in terms of general ideas, and, indeed, the assertion of such a possibility seems to involve a contradiction. The point as to whether it is possible to have two exactly similar *particulars* involves, of course, many hoary controversies which I do not wish to revive here. But it is interesting to note that a similar difficulty has now cropped up in physical theory, in connexion with the identification of particular entities and the difficulty of giving any meaning to the distinction between (say) two points or two electrons which have no *intrinsic* differences.

I shall content myself with saying that it seems to me that the statement that every individual subject is in some sense unique is generally supported by experience and by logic. If this be true it means that the nature of an individual cannot be *completely* deduced by any knowledge, however extensive, about the rest of the Universe, and I should regard this uniqueness as the essence of freedom.

I remember that one of the reviewers of my book *The Supremacy of Spirit* was inclined to ridicule me for the statement that the uniqueness of a subject is the essence of freedom, remarking that one might just as well describe the number 2 as 'free,' since it is unique. I cannot help feeling that this kind of criticism is beside the point; but I need only say, what I should have thought was sufficiently obvious, that, because freedom is an appropriate concept in relation to something which combines uniqueness with the particular attributes of a subject of experience, it does not follow that it is also appropriate in relation to something which combines uniqueness with attributes quite different from those of a subject; or, conversely, that because it is inappropriate in the latter case, it is therefore inappropriate in the former.

I should say, then, that the activity of individual subjects is determined in part by their own nature, that to that extent they are 'free' in a real—and, indeed, in the only possible—sense, and that this implies, in effect, that the uniqueness of an individual subject connotes freedom.

If it be true that sensory events are the way in which we experience

interaction with other subjects, and if the latter are exceedingly numerous (and this seems a reasonable assumption), and free in the sense I have described, we seem to have a basis for rendering intelligible the fact that, as we have seen, the structure of sensory events appears to be such as would result from the statistical consequences of the activities of many independent, or partially independent, agents. I shall give some further consideration to this in a later chapter, when reviewing the results of the whole inquiry. But at this point I will take up the question of a consequence which is generally supposed to follow from the existence of freedom—namely, the validity of the idea of Moral Responsibility.

Moral Responsibility

In this section I shall try to establish, so far as may be, the following three propositions:

(1) That the idea of Moral Responsibility is meaningless;

(2) That no alarming or disturbing consequences follow from this; but, on the contrary,

(3) That the present parlous state of the world is in no small measure due to insistence on the idea of Moral Responsibility instead of on a possible alternative which is more significant, concrete, and empirically based.

The idea of Moral Responsibility is summarized in the word 'ought.' We are continually being told that we 'ought' to behave in such and such ways. Actions in accordance with this are said to be 'right' or 'good'; actions to the contrary are said to be 'wrong' or 'evil.'

Statements about right conduct are, for the most part, based on one of three grounds, related respectively to God, conscience, and an ultimate moral law of the Universe.

Those moralists who base their propositions about right and wrong on the assumed existence of God say, in effect, that we ought to act in such and such a way because it is the 'will of God.' They cannot, of course, assert this without giving a reason for it, and that reason must lie in what they conceive to be the nature of God. The general problems

of the existence and nature of God will be considered in the next two chapters. Here it is only necessary to say that those who would derive the moral law from the will of God appear to conceive God, broadly speaking, as an omnipotent (or very powerful) being, who has a special kind of relation (often imagined as a creating or sustaining) to the rest of the world, who is in some sense personal (or something analogous to it), and, above all, who is *beneficent*. Evidently the last attribute is the essential one, for presumably few people would maintain that we ought to obey another being simply because he was much more powerful than ourselves, or knew much more (unless that knowledge is of a special kind to which I shall shortly refer)—obedience can only be justified if the commands are those of a completely beneficent being.

A serious difficulty arises at this point, for what meaning are we to give to 'beneficent'? Clearly, if we say that a beneficent being is one who wills the right or the good we are in a logically vicious circle, for we shall have defined 'good' conduct as that which is in accordance with the will of God, only to find that we cannot justify this unless God's will is the good will. On the other hand, if we say that a beneficent being is one who desires our comfort, pleasure, or happiness, the appeal to the existence of God becomes unnecessary. It would be enough to say that you should behave in such and such a way because it will make you, and others, happy. There is no reason for complicating the matter by saying that you should behave in such and such a way because it is the will of God, and God desires you to be happy. Moreover, we might fairly ask those who appeal to the will of God as the basis of the moral law, how they can know what that will is. This question seems to be met by one of two replies. The first is that we know when we are acting in accordance with God's will because of the desirable state of mind it creates in us. But if certain actions lead to desirable states of mind, that is in itself a solid and empirical reason for performing those actions, without bringing God into it at all. The second reply is that we have some kind of intuitive knowledge of God's will, and this is related to the conception of 'conscience.'

It is no doubt true that certain modes of behaviour produce an unpleasant or even painful state of mind in the persons concerned. In

spite of the impulse to this behaviour, which they are unable to resist, and perhaps, of some kind of pleasure to which the behaviour gives rise, they have a feeling that they are (as they say) 'doing wrong,' and it is the conflict between this feeling and the pleasurable aspect of the behaviour which gives rise to the painful or disturbed state of mind. The feeling of 'doing wrong' is said to be the 'voice of conscience,' and the latter is often regarded as interpreting the will of God.

Now to say that conscience is a manifestation of God is a pure assumption. It is not possible to infer the existence of God logically from the phenomena of conscience, and if a belief in God is based on the latter it is an act of faith, a matter to which I shall refer later. In any case, I cannot see any reason for dragging in the idea of conscience at all, unless 'conscience' is regarded *merely* as a name for the kind of experience we are considering. The simple fact is that our nature is such that certain kinds of behaviour, although they may involve a pleasurable factor, make for that sense of conflict and unease which detracts from happiness. This seems to me a sufficient reason in itself for avoiding such forms of behaviour. I suggest, therefore, that the idea of conscience has no effective significance as a basis for statements about conduct and its so-called 'rightness' or 'wrongness.' I do not forget that some people feel, from time to time, an overwhelming sense of being 'morally' required to act in such and such a way. But I believe their conscious opinions and descriptions of their own feelings to be partly a rationalization, and partly an account of what are fundamental impulses in terms to the use of which they have been conditioned by their 'moral' education.

Thirdly, appeal is frequently made to the alleged subsistence of a fundamental moral law, which is the basis for principles of conduct and for the validity of the conception of moral responsibility. Belief in this law is sometimes, but not always, combined with belief in the existence of God.

I cannot see that this assertion of a moral law gets us any farther at all. It is first asserted that a certain action is right. Then it is said that the action is right because there is a law which says that actions of that kind (in the given circumstances) are right. This seems to me to be little (if anything) more than a tautology. Certainly it does not in

itself give any content to the idea of 'right,' nor, therefore, to that of moral responsibility. Supporters of the belief in the moral law seem to realize that there is a difficulty here, for they tend to fall back on the assertion that the idea of right, and of a moral law embodying this, are ultimate. But this is a very unsatisfactory way of leaving the matter, and appeal to the ultimate can only be justified if there is no possible alternative, a state of affairs which does not, I think, hold in this case.

There is one other possibility to consider, at which I have already hinted. It might be said that God's knowledge of our nature and circumstances is so complete that He is aware of exactly what behaviour on our part will make us happy, and we should therefore obey Him. If this were known to be true (with its implication of God's existence) it would of course be a sufficient reason for obedience to God. But we cannot know certainly either that God exists or what are the precepts which, if He exists, issue from His omniscience. Hence we can get no farther in this direction.

I see no reason, therefore, for believing that statements about the existence of God, or about conscience, or about a supposed moral law, give any significance to the idea of moral responsibility. But I believe there is another, and positive, reason for regarding the idea as meaningless, and to that I will now turn.

There is a well-known maxim to the effect that 'I ought' implies 'I can'; in other words, that it would be clearly illogical to say that a person "ought" to perform some action which the circumstances of the situation make it impossible for him to perform. The most obvious illustration of this principle is in connexion with physical restraint. There would be no sense, for example, in blaming a person for failing to carry out some desirable action if he were prevented from doing this by material obstacles which he was physically unable to overcome. But the principle is evidently of general application.

Now, as I have remarked in the last section, a person's behaviour is determined partly by factors which are not part of him, and partly by his own nature. As regards the former, it is clear (as we have just seen) that no significance can be given to the idea of 'ought' or 'moral responsibility' in so far as behaviour is determined by these 'external' factors. But what about the latter? I have taken the view that a person

is free in the sense that his behaviour is partly self-determined. That is, to put it somewhat crudely, in a given situation (which provides the external determinants) he acts in such and such a way because that is the kind of person he is. There is hence no significance in saying that he *might* have acted in some other way, so that the idea of moral responsibility is meaningless. For a necessary condition of the significance of such an idea is that there must be significance in the idea of possible alternatives in regard to action. But any other action would only have been possible if the individual concerned were other than he is, which is absurd.

There are, therefore, both negative and positive reasons for holding the idea of moral responsibility to be meaningless. It is, indeed, indefensible in logic and futile in practice. Saints and sages have been moralizing for some thousands of years. How far this has been effective may be judged from the present state of the world.

It may be thought that my dismissal of an idea which has been traditionally regarded as so important has been somewhat cursory. But, as I have already pointed out, in questions of ethics one comes down rapidly to ultimate issues. It is true that the arguments in defence of the idea of moral responsibility have been long and detailed. But I think this is partly because it is feared that abandonment of this idea would have most unfortunate consequences. I believe this fear to be quite unfounded, as I will now try to show.

Anyone who maintains that dropping the idea of moral responsibility would have disastrous results would first have to show that the traditional emphasis on this idea had had *satisfactory* results. Such an assertion would have to be supported by appeal to observations of the actual state of the world, and I imagine that it would not be easy to prove a case. But, without making any assumptions as to what has, in fact, been the effect of the idea of moral responsibility, the abandonment of that idea would be unfortunate only if there were no more satisfactory alternative to put in its place. I do not think it is the case that there is no such alternative.

The alternative I suggest is based on the theory I put forward in Chapter II. Briefly, the argument developed in that chapter was that human beings did, in fact, seek *happiness* as the ultimate end of their

actions—even though they might not always indicate it explicitly by that name—and happiness was defined as a certain state or condition of mind the chief characteristics of which were described. It was further urged, as a consequence, that happiness was the ultimate and, indeed, strictly the only, value. Moreover, it was pointed out that the results of various actions or types of behaviour in terms of happiness were matters of experience or could be made the object of experiment.

This theory is in terms of direct empirical evidence, and not of any hypothetical assumptions regarding the nature of the Universe, such as the existence of a being called 'God' or of a so-called 'moral law.' I would therefore urge that all principles of conduct should be related to results in terms of happiness—that is, that we should say, in effect, not that it is *good* or *right* to act in such and such a way because the will of God or the 'moral law' requires it, but that it is *wise* to act in this way because it leads to happiness, remembering that, generally speaking, the happiness of an individual is bound up with that of others. 'Wicked' would then become a synonym for 'foolish,' and censure and punishment (whether vindictive or remedial) would be replaced by pity and counsel or persuasion, even though in certain cases some degree and duration of restraint would be necessary.

Let me take as a simple illustration Christ's precept, "It is more blessed to give than to receive." I think it is fair to interpret the term 'blessed' as meaning 'happy'; but if this is objected to I should reply that we can still only give meaning to the statement that givers are 'blessed' by supposing that their conduct leads to a state of affairs which is desirable for them—that is, to their happiness. Here we have then a statement which can be tested by experience. It really means, "Your nature as a human being is, as a matter of ultimate fact, such that, if you give freely, you will be happy." This seems to me a much more effective and significant statement than "Give freely because it pleases God" or "because the moral law requires it." We should therefore try to influence behaviour, not by moralizing, but by pointing out calmly and dispassionately that certain types of conduct have, as a matter of actual experience, been found to result in an increase in happiness, and that it is therefore worth giving them a trial; and we should experiment, in the light of experience, with various forms of

communal and individual behaviour as possible ways of increasing happiness.

I am aware, of course, that in advising or persuading a person to try a certain course of conduct we are asking of him something rather similar to an act of faith; but it is faith in the results of experience and not faith in a metaphysical or ethical hypothesis about the Universe.

Of course, it *may* be true that there exists a being whose attributes are such that he may be called 'God,' and, if so, it *may* also be true that actions which lead to happiness are in fact such as can be said, with a suitable interpretation, to be in accordance with the nature or the 'will' of God. But these are metaphysical questions which I shall discuss in the next two chapters. It is quite unnecessary to refer to them in determining rules of conduct, though in dealing with them subsequently we may find we are led to certain metaphysical concepts which effectively replace the traditional ideas of 'the moral law' and 'the will of God' without being open to the criticisms which apply to these ideas.

I believe, then, that we could drop the ideas of 'goodness' and 'moral responsibility' and replace them by 'wisdom' and 'happiness,' and that this would be both logical and effective. But I would go farther and say that insistence on the idea of 'moral' conduct has been in no small measure responsible for the present parlous state of the world. For not only does the idea of a 'moral law' fail generally, as I have tried to show, because it is impossible to give a real significance to it (and the practical consequences of this have been serious enough), but it also fails more specifically because attempts are made by different groups (often with a particular axe to grind) to base it on an appeal to different, and often conflicting, kinds of sanctions. One such sanction is 'the will of God'; another is 'duty to the State,' usually to a particular kind of State—and, indeed, the conceptions of God, too, have been of the most diversified kind. The result has been endless conflict and misery; and, at present, the world seems worse off than ever in this respect. How much better it would be to give up trying to enforce or to inculcate rules of conduct in terms of a moral law based on some kind of sanctions, and instead to appeal in all cases to the

simple and verifiable test of experience—the experience of happiness or unhappiness.

Briefly, then, I wish to maintain that the idea of moral responsibility is meaningless in itself, and that if an attempt is made to give it a significant content by assuming the existence of God or of a moral law (which again has no meaning in itself) the latter are not only unverifiable hypotheses, but principles of conduct derived from them must in the end be viewed in the light of the results of experience. It is, therefore, more logical and practically effective to dispense with hypotheses about the nature of the Universe, and to base principles of conduct directly on the results of experience in terms of happiness. Not only is there no reason why such a procedure should lead to unfortunate consequences, but attempts to control human conduct by 'moral' principles and sanctions have led to conditions of conflict and misery which can hardly be said to be less now than formerly. It is therefore high time that we abandoned such a basis of control and substituted for it something related directly to experience which can be verified and explored by actual trial.

Summary

I will now summarize the main points of this chapter. One of my fundamental assumptions throughout has been that of the existence as unitary entities or individuals, which have often been called 'subjects' of experience and which are typified for each of us by our own existence, the subject being represented by 'I' in the statements we make about ourselves.

I gave reasons in the last chapter for the assertion that subjects were not spatio-temporal entities, and I began the discussion of Immortality by drawing attention to this. It follows that the problem of the immortality of the subject or 'I' cannot be stated significantly in terms of time. There is, in fact, no problem in this sense. Instead, we have the question, "Are there, in the experience of each subject, elements which are correlated with elements in the experience of others which constitute the *bodily* death and disintegration of the first subject?" This is the so-called 'problem of survival.'

The problem of survival can, for the most part, be investigated only by empirical methods. In this connexion, therefore, the evidence of psychical research is of particular importance. I considered this evidence in relation to its treatment by C. D. Broad. I noted that Broad gave particular attention to two theories—the Compound Theory and the Instrumental Theory—which he seemed to think were the only ones worthy of serious notice. He himself supported the first of these theories, which regards 'mind' or, more accurately perhaps, mental qualities, as emergent characteristics of the combination of a body (or bodily factor) and a psychic factor. Broad regarded some of the results of psychical research as giving evidence of the *persistence* of a 'psychic factor,' but not of the *survival* of a 'mind.'

In considering this I first tried to show that the much-quoted Theory of Emergence does not get us any farther philosophically. It seems to involve little, if anything, more than a restatement of the facts under discussion. In effect it amounts to no more than saying that some features of the world are really very odd—or, in the immortal words of Mr Squeers, "She's a rum 'un, is Natur'." Reliance on the idea of emergence is, therefore, a source of weakness rather than of strength to the Compound Theory.

But, even apart from the idea of emergence, there are weaknesses in the Compound Theory itself, as I tried to demonstrate. These weaknesses seem to be due, at least in part, to the fact that the theory is stated in terms reminiscent of traditional dualism, and they lead to suggestions about the psychic factor and the way in which it manifests after death, and about the conclusions to be drawn from these manifestations, which are extremely unconvincing. They seem, indeed, to involve a *non sequitur*.

From a subsequent discussion of the Instrumental Theory it appeared that Broad's criticisms of this theory were not well founded, and, this, combined with the failure of the Compound Theory, led to the conclusion that the main thesis on which Broad's theory of survival is based—namely, the existential dependence of mind on body—cannot be sustained by the arguments he gives.

After developing the theory of mind and body which I myself support (and which is in some ways analogous to the Instrumental

Theory, though it differs from it in certain essential respects), and applying it to the problem of survival, I suggested that, in the result, the analysis pointed to the possibility of survival, and that the empirical evidence could perhaps be rendered most intelligible by the hypothesis of survival.

Passing on to discuss the question of Freedom, I pointed out that much depended on the meaning that was, or could be, given to this term. Of the possible hypotheses regarding the general way in which the activity of an individual was determined, I suggested that the only tenable one was that this activity was determined partly by the essential attributes of the individual himself, and partly by 'external' factors which were not part of his nature. Thus the behaviour of a subject is in part self-determined, and to that extent he is 'free'—indeed, there does not seem to be any other meaning to be given to the term 'free.' On the other hand, to say that an individual, the nature of whose actions are due in part to what he is, and not entirely to what other things are, is 'free,' is surely to give a significant and appropriate content to the term.

The traditional association of determinism with predictability was then considered, and it was remarked that the support of the theory of determinism which was formerly derived by analogy from the physical world had been greatly weakened, if not demolished altogether, by recent developments in physical science. Moreover, the theory which I developed in the last chapter, and which I suggested was compatible with the observed facts, is directly opposed to determinism in general and predictability in particular.

But, apart from analogies from the physical world, I gave reasons for doubting whether, even if it were possible to predict a person's behaviour, it would necessarily follow that he was not free. In any case, I went on to show that accurate prediction of individual behaviour was not possible, for every individual is in some way unique, and in that uniqueness lies the essence of his freedom.

The consideration of Freedom led on naturally to that of Moral Responsibility. Here I maintained that there is no meaning in the idea of Moral Responsibility, nor in its supposed relation to 'God,' or 'conscience,' or the 'moral law.' For, although a person acts in such

and such a way partly because he is what he is, and is thus 'free,' he does not make himself—indeed, such an idea is plainly meaningless.

Thus the idea of freedom does not give significance to the idea of moral responsibility, and appeal to the idea of God or the moral law only shifts the difficulty one stage.

I therefore suggested that the ideas of moral responsibility and the moral law ought to be abandoned, and I held that this would not lead to unfortunate results for there was a logical and much more practical alternative—namely, the establishment of principles of conduct on the basis of experience in regard to the modes of acting, in given circumstances, which are conducive to happiness. Knowledge in this respect has an empirical foundation and can be extended by experiment. We should therefore take wisdom, rather than goodness, as our fundamental concept in relation to conduct; and I drew attention to the negative evidence in support of this view afforded by the spectacle of the present condition of the world after thousands of years of moralizing.

It may be asked, however, whether a belief in God is not really essential to happiness, and whether, if this be so, such a belief is not justified. It is therefore necessary to consider now the problem of the existence of God.

CHAPTER V

The Existence of God

IT SEEMS PROBABLE THAT, FROM THE VERY NATURE OF THE CASE, IT is not possible to deduce the existence of God from propositions which are known to be true. For statements about God involve the content, as well as the structure, of reality.

We can be immediately aware (*e.g.*, in sense-experience) of content as well as of structure. From knowledge derived from this awareness we can sometimes deduce knowledge of the structure, but not of the content, of parts of reality of which we are not immediately aware. Apprehension of content can only be through direct experience, either in acquaintance or in realization.[1]

By the 'content' of anything I mean the essential nature of that thing as distinct from its relations with other things, which are a matter of 'structure.' Of course, there may be, and no doubt generally are, relations (and therefore structure) within the thing itself, but reality cannot be reduced merely to relations. There must also be content in the sense I have mentioned. As a simple illustration let us take the familiar red patch in the visual field. There will be relations (*e.g.*, spatial relations) within this, and it will have relations to other parts of the field. But it also has an essential nature, in particular its redness, which cannot be deduced, which must be directly given in individual experience, and which is its 'content,' though, as I shall suggest later, this content of a sense-datum, considered abstractly in isolation, is really the particular form of the subject's activity.

In the same way, although the existence of an entity corresponding in some way to what we call God would involve the structure of the Universe, the essential nature or content of that entity could only be *certainly* known through immediate awareness—it could not be logically deduced—and that might not be possible.

[1] See pp. 18, 111.

It might well be asked, therefore, whether there is any point in arguing about the existence of God. I believe there is; but I think that such an argument can only be justified by drawing a distinction between what I will call 'reasons' and 'reasons for believing.'

By a 'reason' for a certain proposition *p*, I mean a proposition, or a set of propositions, known to be true, from which *p* can be deduced. By 'reasons for believing' *p* (in the absence of reasons for *p*) I mean that the truth of *p* would render certain other propositions, known to be true, more 'intelligible' to us. For example, the truth of *p*, if it could be assumed, might introduce coherence or connectedness into a group of propositions, each of which was known separately to be true, though there was nothing which obviously welded them into a systematic whole. Or the truth of *p* might, in conjunction with what we know about ourselves through immediate awareness, give us what we feel to be a deeper 'insight' into reality. It is this *kind* of thing I mean by saying that the assumed truth of *p* might render more 'intelligible' the knowledge of certain facts or true propositions. It is the creation of a particular kind of satisfaction, indefinable precisely but understood, I think, by most people—satisfaction, not merely in a pleasurable or wishful sense, but in an intellectual sense. If the assumption of the truth of *p*, in the absence of logical reasons for it, creates this sense of satisfaction, I should call this a reason for believing *p*. Note that, as I have indicated, it differs from the idea that the fact that a belief in *p* would make us happier is a reason for believing *p*, though I am not necessarily maintaining that no weight at all should be given to such a reason. It is a matter to be considered later.

It is clear that the acceptance or rejection of a reason for believing is an ultimate matter. It cannot be dealt with by logic, for it is only called in when logical deduction fails. Evidently it is related to faith. We shall have to consider whether, if no reasons for the existence of God can be adduced, there are reasons for believing in His existence, and, if so, what weight is to be attached to these. In the course of the discussion, the meaning and status of 'reasons for believing' may become clearer.

But we must first consider what provisional meaning in a broad sense we are to give to the term 'God.' I shall consider the question

of the nature of God in greater detail in the next chapter, but meanwhile we must adopt some tentative and general view on this point if we are to make a start at all.

The Meaning of 'God'

Different meanings have been given to the term 'God' in different ages and by different groups of people. But, generally speaking, the following attributes are perhaps most commonly associated with the idea of God:

(1) A nature which is spiritual and, in some sense, similar, or analogous, to the personal.

(2) Indefinitely great power, and perhaps omnipotence—if the last term is really significant.

(3) Indefinitely wide, and perhaps all-inclusive, knowledge.

(4) Ubiquity—that is, presence 'everywhere,' if an appropriate interpretation is given to this.

Partly as a result of these attributes God is considered to have a unique relation to the rest of the world. This relation has been conceived in various ways—for example, as a creating or sustaining, or both, and as mediating interaction between the many individual beings in the Universe. Another aspect of this relation is more personal in character. God is conceived as having certain feelings or emotions or desires in connexion with other beings which are analogous to human experience; and, as a result of these, He is sometimes held to exercise a directive influence (partial or complete) on the course of events. This influence is usually considered to be beneficent—that is, directed to establishing a state of the world of a kind desirable to spiritual beings like ourselves.

All this is, of course, rather vague—not only in general, but also as regards the exact meanings given to the particular terms used. So far as may be necessary these meanings will be analysed in the ensuing discussion, but the rough outline I have given of the idea of God as commonly conceived will suffice to indicate the kind of being the possibility of whose existence we are considering; and, in this chapter

and the next, I shall try to show how far, and in what sense, we are justified in ascribing to God, if He exists, the various attributes I have described. But I will begin the discussion of God's existence by some consideration of the traditional arguments which have been advanced in support of it.

The Traditional Arguments for God's Existence

The traditional arguments for the existence of God fall into three quite well-defined types, differences within each type being only in points of detail. These arguments were, in the main, first stated and explored systematically by Plato and Aristotle. At a later date they were further developed by the Scholastic philosophers. They have been so thoroughly traversed that a lengthy consideration of them here would be out of place; but, although few (if any) thinkers would now ascribe to them any logically conclusive force, they contain so many points of interest and significance that no treatment of the problem with which we are now concerned would be complete without some reference to them.

The types of argument in question are commonly called, respectively, the Ontological, the Cosmological, and the Teleological Arguments. The ontological argument is essentially of the kind which I have called a 'reason' for the existence of God. The teleological argument advances 'reasons for believing' that God exists. The cosmological argument is a kind of mixture of the two.

The ontological argument is an attempt to deduce the existence of God from the fact that the idea of God subsists in the minds of men. It is associated especially with the philosophy of Descartes, who argued that the idea of God involves infinity and perfection and cannot be derived from Man himself, who is neither infinite nor perfect: that the lack of existence would be an imperfection; and that therefore God must exist.

At this point I need only draw attention to Kant's conclusive refutation of the theory in this form, which was to the effect that existence cannot be regarded as an attribute like those attributes the absence of which would constitute imperfection. But I think it may be

possible to state the theory in a different form to which rather more significance could be attached. I will return to this later.

The teleological argument urges that the existence in the world of what is apparently definite design or purpose, both in the general scheme of things and in particular cases, can only be made intelligible by assuming the existence of God. It is obvious, however, that, even if it be held that there is strong evidence for the existence of an underlying purpose (and this is by no means generally admitted), it would not necessarily lead to the conclusion that there exists a being such as God, in the general sense of the term which I discussed earlier. Moreover, the argument is faced with certain special difficulties, the chief of which is the so-called 'problem of evil.' But it certainly cannot be dismissed as of little or no weight, and it will be necessary to try to assess its significance in due course.

The cosmological argument is fundamentally based on the supposed necessity for a Prime Mover or First Cause. In a somewhat different form it attempts to establish that some existence is necessary, and that this can only be so if one existence is necessary *in itself*; while in another form, somewhat similar to the ontological argument, it professes to deduce from the fact that we observe the existence of various qualities in greater or less degree the conclusion that there must be a being who possesses these qualities in the greatest degree and who is the standard against which we assess the comparative degrees.

It is not difficult to pick holes in the cosmological argument. The idea of Prime Mover or First Cause, apart from the real or apparent difficulties of the infinite regress to which it leads, involves the idea of time in an ultimate sense which I have given reasons for thinking invalid. Moreover, even if there were something which could, in some sense, be called a First Cause it would not follow that its nature was of the kind usually attributed to God. In fact, in this form and in the form of an argument for necessary existence, the cosmological argument perhaps amounts to little more than saying that nothing *would* exist unless something *did* exist; while, in the form of an argument from the existence of comparative degrees, it is not only open to the objection that, even if there is a 'most,' this might *in fact* fall far short of the common conception of God, but also to the difficulty that the

Supreme Being should then also possess the undesirable, as well as the desirable qualities, in a superlative degree; or, if this be contradictory, that there should be a devil as well as a God. The last might, of course, be true, but it is not the conclusion to which the cosmological argument is intended to lead.

In spite of these rather glaring faults, however, there is a substance in the argument which has kept it in being, in one form or another, and has caused it to exercise a very considerable influence on certain types of modern philosophical theory, especially those associated with some form of Absolute Idealism. I will consider this when developing my own line of thought, but I will first say something about two more recent types of argument for God's existence—namely, the arguments from value and from the supposed universal existence of the religious sense respectively.

The Argument from Value

The general argument from value is that the existence of value is the world, and the way in which it manifests itself as having comparative degrees, lead to the idea of Absolute Value whether in Truth, Goodness, or Beauty. This Absolute Value is conceived either as identical with God, or as deriving from Him in some way, though there is a certain amount of vagueness on this point.

The argument clearly has no real logical force. It accords with the Kantian principle that, in this matter, 'pure reason' or logic is not concerned, but rather 'practical reason' or moral belief. Moreover it raises the whole question of the nature of value, and it is based on concepts regarding value of a kind which I ventured to criticize in my second chapter.

A more special form of the argument, in terms of moral ideals, relates the latter to conscience, or to the supposed existence of a supreme moral law, or to both, and asserts that these various concepts, which are regarded as derived from experience, can only be given significance by postulating the existence of God. But in this form the argument is, I think, open to the objections I have urged in a relevant connexion in the last chapter.

Argument from the Religious Sense

This argument asserts the universality, at all periods and in all races of men, of the religious sense—that is, of the tendency to believe in the existence of a Power far transcending mankind, which is personal in character and by which we are intimately affected. The concept of this Power has evolved in course of time, through various phases, into the modern conception of God. It is held that in some cases there has been immediate awareness by individuals of God's existence, and that this 'religious experience,' together with the universality of religion, affords strong presumptive evidence of the existence of God.

It is no doubt true that religion, in an admissible sense of that term, is practically universal. It is also true that some individuals firmly believe that they have had immediate experience of God. But in view of what we know of the nature of illusion, and of the fact that beliefs of various kinds which were at one time universal are now known in some cases to be certainly false, many people find it difficult to attach much weight to this argument. It is clearly rather weak in itself, though it would undoubtedly have some *corroborative* force in conjunction with other arguments for God's existence.

In any case the arguments from value and from the religious sense are in the nature, not of reasons for the existence of God, but of reasons for believing in His existence. They are not fundamentally novel, but embody elements similar to those which occur in the three traditional arguments, though the ideas are arranged and developed in a somewhat different way.

The Case for Believing in the Existence of God

I will now try to develop systematically an argument which might be held to justify belief in the existence of God. It will be apparent that it involves assumptions at certain points which are ultimate in the sense that they cannot (as it seems to me) be proved or disproved by logical deduction from propositions which *all* rational beings would accept as true. Their acceptance or rejection is a personal matter,

depending on how far they seem to be immediately evident to the individual concerned. I myself feel them to be immediately evident.

I suggested earlier in this chapter that it is not possible to produce reasons for the existence of God—that is, propositions, known certainly to be true, from which the existence of God can be logically deduced. But I think that an argument on the lines which follow comes near to achieving this. If this contention is valid the argument, though falling short of a reason for God's existence, would constitute a strong reason for believing in His existence. In type, the argument might, I think, be appropriately described as analogous to a combination of the traditional Ontological and Cosmological Arguments.

In the first place, I would assert that mere nothingness or non-existence cannot be a sufficient condition for the existence of anything —*ex nihilo, nihil.* If this be so it seems to follow that the fact that something exists cannot be contingent, so that if *anything* exists (as we know it does) then the existence of *something* is necessary.

I do not think we can escape from this conclusion by introducing the idea of time—*e.g.*, by saying that, because nothing exists at a certain time t_1 it does not follow that nothing exists at some other time t_2. For, apart from the fact that (as I have tried to show) time is not real in the sense here implied, the idea of time has in any case no significance in the absence of existence. It is meaningless to say that nothing exists at a certain time t, for it is impossible to define a meaning of time if nothing exists.

It is necessary to decide next what exactly is connoted by 'existence' as I am now using the term. I believe, in fact, that it can only be applied to entities of the nature of subjects of experience—that is, entities having being-for-self; and, as I have said earlier, it seems to me that an entity cannot have being *in* itself unless it has being *for* itself. I therefore suggest that subjective existence—this being for itself which is being in itself—constitutes 'substantial' existence, and I accordingly accept the idea of substance and regard subjective existence as constituting the category of substance. Substantial existence is distinguished from the being of such things as ideas and propositions, this distinction being commonly recognized by describing the being of the latter by some term (such as 'subsistence') other than 'existence.'

It may be asked in what sense elements of the object of experience, such as sense-data, have being. Do they, for example, exist in the sense that subjects exist? I have given reasons for a negative answer to this last question. I believe a more intelligible and coherent account of reality can be given by regarding sense-data as existentially dependent on subjects—I use the term 'existentially' in a general sense here as there is no adverb corresponding to 'being.' I do not think anything can 'exist'—that is, have substantial being—if its being is *entirely* dependent on the being of other entities. A number of entities might have substantial being even though they were existentially *inter-dependent*, that is, if the existence of each depended on the existence of all; but if the being of an entity is existentially dependent on other entities in the sense that it cannot *be* unless they exist, although they can exist without it, then it cannot have substantial being for itself or, therefore, in itself, and so cannot exist. I should say, then, that particular sense-data do not exist as subjects exist, but are in fact the *form* of the sensory activity of the subject concerned, as determined by his interaction with other subjects.[1] A similar argument applies *a fortiori* to such things as images and thoughts.

I have therefore reached the position of asserting that the existence of something is necessary, this 'something' being a subject or subjects. It must then be asked whether it is conceivable that only one subject exists. It is generally held that there is nothing in experience or in logic which, if he were clearly aware of it, would demonstrate conclusively to the solipsist that his belief that he alone existed was false. No doubt that is true; but, at the same time, the belief in the existence of others is irresistible, and no progress can be made without it. It is, indeed, extremely difficult to conceive of the existence of a single subject, acting *in vacuo* as it were, and probably no one would hesitate to believe that the existence of more than one subject is as certain as anything can be failing rigorous logical proof.

We may justifiably postulate, therefore, the existence of a plurality of subjects. But this plurality is not a mere collection of isolated individuals. The individuals are constituents of a *universe*. For once we accept at their face value the theoretical considerations and the facts

[1] For a development of this point, cf. *Spiritual Pluralism*, p. 249.

of living experience which practically compel us to postulate the existence of other subjects, then we must go on to accept the disclosure of experience that the various subjects are linked in intimate relationship with one another, and that this relationship is not something merely descriptive or symbolic—it is something which has a substantial ground. I would, indeed, venture to maintain, more generally, that if there is a relation between two (or more) entities of any type or order of being, then they must be constituents of a unity of being, which has the essential attributes of that type or order, and to which they are related and in and through which they are related to one another. In the case we are considering, the entities in question are substantial existents, or subjects of experience, and I suggest that, if they are constituents of a universe and not a mere collection of disconnected reals, they must be related to a unitary substantial existent—that is, to a being which has the essential attributes of a subject of experience, however high (or low) the degree of development of these attributes or however they may be supplemented. We may provisionally identify this unitary being with God, although we cannot finally decide whether the term is justified until we have further considered such facts as may throw further light on the nature of this being, a matter I shall discuss in more detail in the next chapter.

At this point I will digress shortly to consider a matter of some interest and importance. If what I have said in the last paragraph is true, it would seem to follow that every individual subject must interact with *all* other subjects, and therefore be affected in some way by them all. I should accept this conclusion without hesitation, holding that this interaction makes itself felt, in the experience of individuals, partly at the conscious and partly at the subconscious level.[1] If it were objected that we are not, for example, affected by the happiness or misery of individuals of whom we have apparently no knowledge at all I should reply that we could only be sure of this if we were perfectly happy. I think it unlikely, however, that anyone could claim to be perfectly happy, and the defect from perfect happiness might be

[1] Cf. *Spiritual Pluralism*, pp. 250 ff. The 'subconscious' must, of course, be carefully distinguished from the 'unconscious,' to which I shall refer in my last chapter. Cf. also *The Supremacy of Spirit*, pp. 118 ff.

due in part to a subconscious *rapport* with other individuals of whom we knew nothing through the ordinary obvious channels of knowledge.

The nature of the dual relation between God and the Many cannot be clearly conceived. Ontologically God transcends the Many in so far as He is distinct from and not identical with them; but He is also immanent in them. The words 'transcendence' and 'immanence,' though they serve to indicate the nature of the dual relation, do not enable us to imagine it. But an analogy may help us to realize that such a relationship is possible. For the relation of the subject to his body is of a similar type. The subject is distinct from his body. He transcends it, and can perceive it objectively. But he is also immanent in it, in the sense that he acts with and through it, and shares in its existence.[1]

An argument on some such lines as the foregoing seems to me to provide strong reasons for believing in the existence of a being who may well turn out, on further consideration, to be appropriately described by the term 'God' as commonly understood. But before considering more fully the nature of this being I will discuss certain other subsidiary arguments which might be advanced for believing in His existence.

Supplementary Arguments

Just as the main reasons I have advanced for believing in the existence of God are analogous in some ways to the Ontological and Cosmological arguments, so the supplementary reasons which I will now suggest are analogous in some ways to the Arguments from Design, from Value, and from the Religious Sense respectively.

I would first draw attention to the fact that reality is characterized by *order*—it is a cosmos, not a chaos. As I have already suggested, it seems doubtful whether completely chaotic existence is conceivable, for the idea of existence seems to be incompatible with the idea of chaos. It is clear that order is in a sense relative and susceptible of degrees. Wherever there is conflict of any kind there is a certain degree of disorder, but the process and results of conflict are themselves

[1] Cf. *Spiritual Pluralism*, pp. 212 ff.

generally describable in definite terms. There is, in fact, order in disorder itself. Wherever there is a system of relations of any kind, and therefore a structure, there cannot be complete chaos. Now it seems to me that entirely structureless existence is meaningless, and, if this be so, existence is incompatible with chaos.

In terms of the theory of Time and Causality developed in Chapter III, a world completely chaotic from the point of view of an observer might be defined as one in which, given any observed event, the probabilities, relative to the observer, of all other possible events were the same. In other words, not only might anything happen, but there would be no grounds for expecting any one event *rather than* any other event. In the physical realm this would be equivalent to saying that all intervals relative to the observer were equal. Evidently this could not be a structural basis for anything analogous to a physical universe as commonly conceived, and this supports the belief that the idea of a completely chaotic world is meaningless.

Apart from the difficulty (to which I drew attention in the last section) of conceiving a world of many interacting individuals unless there exists a substantial (and therefore subjective) entity whose relation to the many is of such a character as to unify the whole, the fact that reality exhibits an overriding orderliness is itself, I think, a positive reason for believing in the existence of such a unifying entity. For although we may describe this order in terms of abstract principles which (metaphorically) determine its nature, it is in itself not merely symbolic, but a dynamic reality interlocking the constituents of the world into a unitary organic whole. It may not be possible to show that this fact logically requires the existence of a single entity immanent in the whole, but I suggest that the assumption of the existence of such an entity renders the fact much more intelligible.

The fact of order, however, does not by itself tell us much about the nature of the One, even if we assume the existence of the latter as its basis. It is not enough to say, as some have done, that order immediately implies *reason*, for, as I have suggested above, some degree of order is implied in any kind of existence which is conceivable at all; and, moreover, the kind of order we observe in experience is not of

the logical type as manifested in a process of rational exposition passing from accepted premisses to conclusions by means of 'self-evident' principles of deduction. If it be legitimate to apply the term 'rational' to observed phenomena at all, it may only be because we ourselves impose a structure on the phenomena by the very fact and method of our observation and analysis, a view to which scientific epistemology lends increasing support. But to investigate further the possible significance of order in relation to the nature of God we must examine more thoroughly the *kind* of order which is found in the world. Order of a kind—of a statistical kind, in fact—may emerge from the interaction of factors which are largely independent and not directed towards a common end. But it is frequently asserted that, in certain of its aspects, the order observable in the world is of such a character as to manifest the existence of a universal purposive activity, distinct from (though it may be related with) the purposive activities of the many individual subjects. If this indeed be true it is a fact of the highest significance and importance.

Now the concept of 'purpose' implies not merely a process leading to a definite end, but an end which subsists as an idea in a mind, the process being controlled by this mind in order to realize the idea. Any process will lead to some kind of result, and we have to consider what kind of result may properly be accepted as evidence that the process in question is controlled by purpose.

It is extremely difficult to decide in any given case whether a process may properly be said to be informed by purpose, merely from observation of that process. To take a simple illustration, we might say that an animal eats in order to live, and that the process of eating is informed by the purpose of ensuring the continuance of health and life. But we cannot deduce the existence of purpose, whether in the animal itself or in some underlying reality, merely by observing the process. All we can deduce from observation of the process, as such, is that eating is, in general, followed by maintenance of life and health whereas starvation is followed by wasting and, ultimately, death. On grounds of observation alone we have no more reason for saying that the *purpose* of eating is to maintain health and life than for saying that hydrogen and oxygen combine *for the purpose of* forming water.

The same is true at higher levels of (so-called) purposive process. All that observation tells us is that such and such a process leads to such and such a result. We can only attribute purpose to the process if we interpret it in relation to our own behaviour, or, perhaps—and this is a point to be further considered—if we view the process in a wider setting, even, perhaps, in a universal setting.

The interpretation of particular limited processes by analogy with our own behaviour need not detain us, for we are not concerned here with the question as to how far the activities of the Many, as individuals, can be considered to be purposive, but with the evidence for the purposive activity of a single universally immanent being. Moreover, consideration of the real or apparent purpose manifested in a particular process does not, by itself, shed any light on the latter problem. In order to determine whether the existence of the particular process has any bearing on the possibility of a universal purposive activity it would be necessary to view it in the whole context of reality.

It may be asked how any individual, with his limited experience, could discern a purposive pattern in the Universe as a whole, even if it existed. But I think this difficulty is more apparent than real; for, in view of the unity of reality and the interrelatedness of its constituents, any universal characteristic, including that of a universal design or purpose, will disclose some evidence of its existence in the experience of every individual, though this evidence may not always be obvious or clearly recognized.

In this connexion I should like to comment on the fact that it has been fashionable from time to time to minimize the status of Man in the Universe, and to insist on his ignorance and to enjoin humility upon him, by referring to the vastness of space-time in comparison with the immediate circumstances of human environment. This line of argument seems to me to rest on a confusion of thought. In the first place there is no value in mere size or quantity. It would, for instance, be difficult to maintain that there is anything intrinsically 'greater' in a distance of one megaparsec, or in the bulk of astronomical bodies and configurations, than in such qualities in human beings as are manifested by Beethoven's Ninth Symphony or Einstein's Theory of

Relativity. Secondly, if we are to speak in metaphors, it is much more correct, as I have tried to show, to say that space-time is in us rather than that we are in space-time. Thus we need not feel at all inferior in relation to the stellar Universe, for it is a part of the content of our own experience; but the awe with which it is sometimes contemplated is justified, for, though part of our experience, it results from the vast potentialities in respect of form and variety of content which characterize experience. We are ignorant, and should be humble, not because of the magnitude of the material world, which, in any case, is purely relative, but because each of us is only one among a great multitude of individuals, and experiences but one 'aspect' of the whole reality.

But we have to inquire how far, if at all, there is disclosed in the experience of individuals evidence of a universal purpose. Now I suggest that processes which we regard as purposive are all such as are directed to the production of value, or of something instrumental to value; that is, to producing that satisfaction and fulfilment of the individual or individuals concerned which are essential elements in happiness. The value aimed at may be an immediate result of the process, or the latter may be but one link in a chain or combination which, as a whole, is directed to the achievement of value. In the last analysis it might turn out that all purposive process tended towards the ultimate production of the supreme value—namely, universal and perfect happiness—though by way of more limited, incomplete, and individual values. We see something of this kind, on a small scale, in the life of a community, where processes may have an immediate reference to the well-being of individuals and a more remote reference to the well-being of the community as a whole. But without this element of direction towards value it seems to me that we cannot significantly describe a process as purposive.

Let me hasten to anticipate a possible objection. It may well be asked whether there do not exist in the world purposes which are malignant, and, if so, how such can be said to be directed towards value. It is true—indeed, obvious—that there are purposes which would be regarded by a large part of mankind as being malignant in nature. But the individual who is actuated by such purposes is un-

doubtedly striving for something which he supposes to have value for him—that is, something which will give him that fulfilment and satisfaction which would constitute happiness for him. He is, of course, mistaken in this. The world in general, and human beings in particular, being what they are, it is only possible for an individual to achieve happiness through, and in conjunction with, the happiness of others. It is not possible to achieve happiness (as distinct from partial and transitory pleasure) by ignoring others, or at the price of their unhappiness. I have referred to this point before, and the undoubted fact that the happiness of each is bound up with the happiness of all is itself significant of a substantial unity in the world.

Let us now return to our main question as to how far evidence is apparent of the existence of universal purpose. As the experience of individuals is necessarily limited, we can never have conclusive evidence on this point; we can only observe whether purpose appears to be at work in processes of ever-widening scope up to the limits of what can be comprised within the experience of individuals.

No doubt most people would agree that, within certain circumscribed fields, the processes ensuing from the interaction of the individual organisms which make up animate nature appear to be directed towards the mutual well-being of the individuals concerned. In so far as the latter are conscious (and, as I have indicated, I believe that there is some degree of consciousness at every level because the substance of reality is essentially spiritual) it is reasonable, I think, to suppose that this well-being is experienced as something intriniscally akin to what, at our level of consciousness, is called happiness. I should therefore regard the processes involved as purposive. In many cases, such, for example, as symbiotic interaction among the lowlier organisms, it is difficult to suppose that this purpose subsists in the consciousness of the organisms concerned. To this extent, then, we might regard the occurrence of processes of this kind as *prima facie* evidence of the existence of a spiritual being transcending the organisms which manifest the purpose in their behaviour. But it is, of course, no more than *prima facie* evidence; that is, we cannot strictly deduce from the phenomena the existence of a transcendent (but also immanent) spiritual being, though the assumption of the latter may be

regarded as rendering the phenomena more intelligible in a very real sense.

It is true, of course, that, in addition to harmonious interaction of the kind we have just been considering, we also observe disharmony and conflict, and this I shall consider in the next chapter as part of the general problem of evil. But the fact of evil leads on to the question whether, in spite of this, we can observe signs of a universal purpose in phenomena on a wider scale than those referred to in the last paragraph and, in particular, in the world of humanity.

This is, no doubt, another of those issues on which everyone must decide for himself as to the significance of the evidence available. But I would suggest that, amid the confusions and conflicts of human behaviour and development, signs are discernible which might reasonably be interpreted as manifesting a directive influence other than the activities of the immediate participants in the drama. For it is by no means rarely that disastrous human misfortunes (especially war), though evil in themselves and in the causes which produce them, lead to results which are valuable in that they *tend to* the increase of happiness, progress of this kind often being far more rapid than it would have been in the absence of the evil in question. As I have said in an earlier chapter, it would be difficult to show that the world is a happier place now than it has been in the past; but I think it is probably true that many of the conditions which make for happiness exist now in a greater degree than ever before. In particular there is an increasing measure of that agreement, among human beings, as to the ways of living which make for harmony and happiness, which, I have suggested, is the chief (perhaps the only) significant indication of progress; and this progress is in no small measure due to the challenge of evil—namely, the activities of those who seek what they believe will satisfy them in complete disregard of, or actually through, the wretchedness of others, and who are therefore in opposition to progress towards universal and perfect happiness.

Speaking metaphorically, we might therefore imagine God to exercise a kind of 'statistical' control over the development of the world, through an influence definitely and continuously directed towards the attainment of universal happiness, so that the multitudi-

nous activities of the many partially free and independent individuals, as limited by the universal directive influence of God, must 'average out' in more or less steady progress in spite of fluctuations which, though apparently violent at close range, are insignificant in comparison with the scale of the Universe in general and of human history in particular. Hence we progress even in spite of ourselves, and catastrophes such as war, arising from the actions of human beings, may perhaps be regarded as the self-destruction of evil. Without the directive influence of God, human existence might be static, showing, on the whole, neither progress nor regress. But when a definite progressive movement has been established it tends to develop at an increasing rate, for the activities of more and more individuals are directed in such a way as to aid the general progress. Although the present state of the world is, to say the least of it, very far from being characterized by happiness, it is by no means improbable that this is but a transitory condition which may be succeeded by an era of rapid progress. But, if this be so, it will have been made possible only by the continued operation of influences which make for steady progress, and which have resulted, as already mentioned, in the establishment in an increasing degree of the *conditions* necessary to the attainment of happiness. The potentiality is there and, with the destruction or removal of the causes which at present frustrate it, may be realized in an advance more rapid than ever before.

It might perhaps be asked whether, even if there be a directive force which happens to make for what we call progress, it might not be a 'blind' force, and not the manifestation of the activity of a conscious being. I believe the answer to this to be that we cannot give any significance to the idea of blind or unconscious forces. Mechanical and electrical forces have been cited as typical examples of the latter. But these (so-called) forces are pure fictions introduced for convenience at certain stages in the analysis developed in connexion with mathematical physics. They do not, however, correspond to any reality, and they do not appear in the fundamental equations of physics. The only experience we have of what can significantly be called 'forces' are in our own activities which influence our environment. I am aware that attempts have frequently been made to explain this away as an illusion.

But the fact is that we do have this experience, commonly called 'volition,' of exerting influence on the environment, and we do not dispose of it by calling it an 'illusion,' any more than we dispose of an hallucination by calling it 'subjective'; and I suggest that to describe this experience, as such, as that of the operation of a directive force is quite appropriate, and, moreover, that only the activities of conscious beings can be significantly described in this way.

Turning to somewhat different considerations, it seems to me to be probable that a belief in the existence of God is necessary if an individual is to make real progress towards the attainment of the supreme value of perfect happiness. For although it is an empirical fact that certain modes of behaviour tend to produce an increase in happiness, it is difficult to see how there could be any guarantee that reality is of such a nature that, potentially, happiness can increase indefinitely towards the goal of perfection unless there exists a being in the nature of an all-powerful and beneficent God. The exact meaning of the attributive terms will be considered in the next chapter—I assume here only that they carry a meaning akin to that in which they are commonly, if rather vaguely, used. Moreover, the individual frequently needs a belief in God to sustain him in the trials imposed upon him by the present imperfections of the world in his attempts to attain happiness, and he often feels that the conflict between his desires and aspirations and his actual experience can only be made intelligible by postulating the existence of a God whose nature and relations with the plurality of spirits are not only such as to make such a conflict possible (when the nature of the individuals of the plurality is taken into account), but also such as to ensure that the conflict will be ultimately resolved.

I am aware that some people would deny that a belief in God is necessary to their happiness, but I do not think they would find it easy to show that their defect from perfect happiness is not due in part to the absence of such a belief.

The considerations I am now discussing are not reasons for believing in God in the sense in which I have hitherto been using that phrase. They may be necessary conditions for the attainment of happiness, but they do not in themselves require the existence of God to make

them intelligible. Yet their almost complete universality, combined with the universality of the urge towards harmony and fulfilment which is the essence of happiness, is no doubt significant. Inverting the argument, one might say that, given the existence of God and the existence of individuals like ourselves, a situation of the kind we are considering might be expected to arise, and to this extent we have a further reason for believing in God's existence, though it is very far from being a logical reason for this existence.

I have tended more and more—unavoidably—to introduce matters which are related mainly to the nature of God, and which therefore properly belong to the next chapter. But, before closing the present chapter with a summary, there is one point which may be dealt with here. Supposing that, in the result, we find good reason for postulating the existence of a God who is in some sense *personal* in nature, ought we not (it may be asked) also to postulate the existence of a personal devil, especially in view of the fact of evil?

I think there is a reason against such a view which may well be conclusive. The essence of a developing personality is a steady increase in harmonious integration, and in a supreme personality this integration might be supposed to be completely achieved. But the essense of minds we regard as evil is the reverse of this. It is marked by conflict and disharmony and tendencies to destruction and disintegration. Evil minds may, of course, be marked by high intellectual calibre and great driving-force, but they are on a low plane of personality and their drive is towards the opposite of what is implied in the integrated and fully developed individual or community. Hence the hierarchy of evil would tend towards a pole opposite to that of the supreme personality, and the idea of a personal devil may therefore well be a contradiction in terms. *Complete* evil would thus be the absolute negation of personality and might therefore be regarded as devoid of moral significance. Its substantial basis might approximate to what is manifested to us as inanimate matter. This conclusion may no doubt appear at first sight to be somewhat startling and fanciful. But I think it is seen to be not altogether inappropriate when we remember the sheer destructiveness of inanimate matter when uncontrolled by personal beings. Moreover, one of the most distressing facts in connexion

with the evil mind is the difficulty faced by men of good will in making contact with it in such a way as to influence it effectively. The greater the evil, the greater the difficulty, and physical restraining force may then be necessary. This situation tends towards its limit in the case of inanimate matter.

Summary

I began this chapter by pointing out that it seemed likely, from the nature of the case, that it was not possible to deduce the existence of God, even if this existence were a fact, from propositions known to be true. Accordingly, I drew a distinction between reasons for a proposition *p* (that is, true propositions from which *p* could be deduced) and reasons for believing *p*—namely, that the truth of *p* would render other propositions, or groups of propositions, which were known to be true, more coherent, consistent, and 'intelligible' to us. The acceptance or rejection of a reason for believing is an ultimate matter which cannot be dealt with by logic but is related to faith.

As a preliminary to discussion it was necessary to adopt a provisional definition of the term 'God,' akin to the commonly accepted meaning, and it was suggested that this should include the attributes of spirituality and (in some sense) personality, great power and even (in some sense) omnipotence, something approaching or attaining to omniscience, and ubiquity. Partly as a result of such attributes, God would be considered to have a unique relation to the rest of the world, and to exercise a directive influence of some kind on the course of events which would be beneficent in character.

The traditional arguments for God's existence were then considered. It was pointed out that the Ontological argument was in the nature of a reason for the existence of God, which attempted to deduce the latter from the subsistence of the idea of God in the minds of men. The main flaw in the argument arises from the fact that existence is not an attribute in the sense in which that term is used in the argument in discussing the nature of perfection.

The Teleological and Cosmological arguments, on the other hand, were seen to be reasons for believing in the existence of God. The

former is based on the alleged existence of a universal purpose, but, even if this be admitted, it does not necessarily imply the existence of God, as defined, and is in difficulties in connexion with the fact of evil. The latter argues from the supposed necessity for a Prime Mover or First Cause, and is faced with the difficulties arising from an infinite regress and from the nature of time conceived as something real and ultimate. Moreover, even if there were significance in the idea of a First Cause the latter might not have the characteristics usually attributed to God.

Arguments from the existence of value and from the supposed universality of the religious sense were then discussed. The former appeared to be open to objections raised previously in criticizing certain forms of the concepts of value and of moral ideals, while the weight of the latter is seriously diminished by what we know of the nature of illusion and by the fact that some beliefs which have been almost universally held are now known to be false.

A case for believing in the existence of God was then developed by the following steps:

(1) If *anything* exists the existence of *something* is necessary.

(2) Existence is subjective (*i.e.*, 'spiritual') in nature.

(3) The existence of a plurality of subjects is a justifiable postulate.

(4) The plurality is not a mere collection of isolated and disconnected individuals, but a Universe—that is, an organic unity of being.

(5) Hence the many individuals must be supposed to be related to a certain unitary substantial (and therefore subjective) existent.

It was realized that this would imply that every individual subject must interact with all other subjects, and it was suggested that this interaction was manifested, for each, partly at the conscious and partly at the subconscious level. The relation between God and the Many would be dual in so far as God transcends the Many but is also immanent in them. The nature of this relation cannot be clearly conceived, but something of the kind is realized by a subject in his experience of his relation to his body.

Certain supplementary arguments were then developed. It was pointed out that the existence of an order, which interlocks the constituents of the world into a unitary organic whole, is rendered more intelligible by postulating the existence of a single immanent entity of the type discussed. But this order does not, as such, provide much evidence as to the nature of the being who is its ground. To investigate this it is necessary to inquire how far the order observable in the world seems to manifest a universal purposive activity. It was suggested that the concept of 'purpose' implies not only a process leading to a definite end, but also an end which subsists as an idea in a mind; and, moreover, the process is directed to the production of value, or of something instrumental to value—that is, ultimately, to the production of happiness.

Reasons were then given for holding that there was some *prima facie* evidence of the existence of a universal purpose operating through a directive influence other than the activities of the various individuals of the plurality. It was suggested that this might be the reason why things evil in themselves often seemed to lead in the end to valuable results; and, although it would be difficult to show that the world was a happier place now than in the past, it was probable that the conditions which make for happiness exist now in a greater degree than ever before. We might, therefore, suppose God to exercise a general 'statistical' control over the development of the world so that, in spite of fluctuations, the multifarious activities of the plurality of individuals must average out in steady progress.

It was held to be probable that, for an individual to make real progress towards the attainment of perfect happiness, a belief in the existence of God was necessary; for unless God exists there could be no guarantee that reality was such that, potentially, happiness could increase indefinitely. Moreover, the individual frequently needs a belief in God to sustain him in the trials arising from the present imperfection of the world. While these considerations may not in themselves constitute reasons for believing in God in the sense we have been adopting, their almost complete universality may well be significant, and the situation arising from them is rendered more intelligible

by postulating the existence of God in addition to that of beings like ourselves.

Finally, an argument was advanced in support of the belief that, though there may be a personal God, there cannot be a personal Devil, for the essence of developing personality is increasing harmony and integration, whereas evil is the negation of this. Hence to conceive absolute evil as personal seems to be a contradiction in terms. Complete or absolute evil would, indeed, be devoid of moral significance, and might perhaps be approximated by what is manifested to us by inanimate matter. Leaving this somewhat unusual conclusion, we may now proceed to consider the question of the nature of God in greater detail.

CHAPTER VI

The Nature of God

AT FIRST SIGHT IT MAY SEEM PRESUMPTUOUS FOR A FINITE INDIvidual to attempt to analyse and, so far as he is able, to comprehend the nature of God. But I do not think it is really presumptuous, for unless we can form in our minds some fairly definite idea of the nature of God, all religions, as well as all philosophical theories about reality based on a metaphysical theism, become meaningless.

In the last chapter I have given, for what they are worth, philosophical reasons for believing in the existence of an entity to which the term 'God' might suitably be applied, at any rate provisionally, pending the further discussion of the nature of this entity which is the object of the present chapter.

As God was regarded as a *substantial* existent, His existence is therefore, according to the theory I support, *subjective* in character. Hence we can at once make certain broad and general statements about His nature. As He is a spirit or subject, His existence will consist essentially in experience, and it seems evident that experience of any kind must exhibit certain general features which characterize our own experience. I suggest that the most important of these general features are included under the traditional categories of cognition, conation, and feeling—that is, those concerned respectively with the apprehension of matters of fact at all levels from the sensory (or what corresponds to the sensory) up to the highest forms of intuition and abstract thought, with effort or striving, and with the tonality of states of being. Apprehension, effort, and feeling-tone are matters of immediate experience and not verbal definition (except, perhaps, to some extent by denotation), and they carry for us a significance arising from experience.

It is of course true that the three categories I have mentioned, like all products of the analysis of individual experience, are not in fact

separate or separable, but synthesized or integrated, for experience is a unity. Moreover, the particular way in which they enter into God's experience may, and no doubt will, be very different in some respects from the way in which they enter into our own experience. Nevertheless, we are justified for the purpose of our discussion in considering them to some extent separately, and at the same time in assuming that, as God's existence must consist, like that of all subjective beings, in experience, the latter will have cognitive, conative, and tonal aspects, and we may therefore begin by considering these, afterwards passing on to a discussion of God's attitude and behaviour towards the Many and, in particular, towards human beings.

Aspects of God's Experience

I. *Cognitive.* Under the heading of Cognition there is commonly included all levels from bare sensory experience up to imagination, conception, and abstract thought. The main division comes between cognitive experience in which sense-data play a main part, and cognitive experience in which sense-data are absent except, perhaps, in the form of that rather vague and diffused background which accompanies all bodily life. The former is sometimes referred to for convenience as 'external,' for it directly involves, or appears to involve, beings other than the subject of experience concerned, the latter being termed 'internal' as it is in a sense a pure activity of the subject relatively unmodified by 'external' factors. We will consider these two main divisions in relation to God's experience. One of the questions to be discussed will be how far we are justified in attributing personality to God, or something analogous to personality. When I speak generally of any particular type of experience in relation to God I should be understood to mean whatever corresponds in God's experience to that particular type of human experience.

In considering sense-experience we must remember the assumed dual relation (immanence and transcendence) of God to the rest of the world. I have postulated throughout that the sense-experience of finite subjects is grounded in the interaction, or (if a more neutral term is preferred) the interrelation, of subjects with one another. In

so far as reality is a universe, I have suggested that every subject interacts with every other, though much of the sensory manifestation of this may be, for him, subconscious. Whether a sensation (*i.e.*, the sensing of a sense-datum) is conscious or subconscious depends on its intensity, and it is accordingly appropriate to regard the interaction between subjects as susceptible of degrees. That part of a subject's experience which is a sensing of what we call his 'immediate environment' would thus connote a comparatively intense interaction with a limited group of subjects out of the whole plurality.

In sensory experience, then, the emphasis is on the *distinctiveness* of individual subjects. Now, in so far as God transcends the Many, He is distinct from them as an individual, and His interaction as an individual with other individuals may be supposed to give rise to experience of the sensory type. But as God is ubiquitous or universally present (the terminology is, of course, metaphorical), there will not in His sense-experience be differences of intensity corresponding to those which, in human experience, give rise to the distinction between conscious and subconscious sensation, nor, therefore, will there be anything corresponding to the distinction between conscious and subconscious 'levels,' at any rate so far as sensation is concerned. This does not mean, of course, that God's sense-experience is necessarily uniform. In human experience at the conscious level, subjective activity determines a focus of attention which continually shifts about the whole field. Something corresponding to this may be supposed to exist in God's sense-experience.

On the other hand, in so far as God is immanent in the plurality of finite individuals, He will, as it were, *share in* their sense-experience. We cannot imagine or define exactly the nature of this shared experience, nor resolve completely to our satisfaction the logical difficulty of numerical distinctness. As God and the finite subjects are not identical we must perhaps suppose that their community of experience is manifested by qualitative similarity and cannot consist in numerical identity. But imagination may be helped here by referring to the immanence of a 'mind' in a 'body.' It seems to me quite reasonable to suppose that the subject which is the 'mind' of an organism shares in the experience of the subjects which are manifested by the 'body' of

the organism, the experience of each of the 'subordinate monads' being one aspect of at least a part of the whole experience of the 'dominant monad,' and this not only as regards sense-experience but also as regards other types of experience to which I shall refer later.

We might, then, distinguish analytically two aspects in God's sense-experience, though in fact these aspects will be synthesized. As transcendent God perceives reality as a whole from, as it were, a universal point of view. As immanent He perceives it from the many points of view of the plurality of finite individuals. I think these considerations provide a possible clue to the nature of what, for God, corresponds to sense-experience, which may enable us to form some conception of it even though we cannot imagine it; and I will now try to develope this.

We analyse the object of sense-experience in finite subjects into elements, which we call 'sense-data,' standing in various relations to one another, in particular (and most important) in relations of a kind which we call, respectively, 'spatial,' and 'temporal.' These I have discussed in Chapter III. The content of this experience—that is, the essence of the particular sense-data themselves, is something which can only be apprehended in the immediate experience of individuals. But the *structure* of sense-experience can, of course, be analysed and dealt with conceptually. It consists mainly in the spatio-temporal relations of sense-data to which I have just referred, and it is described in the ordinary equations of mathematical physics and investigated by manipulation of these.

Now, just as the elements of finite sense-experience consist in sense-data in a spatio-temporal relational structure described by the ordinary equations of physical science, so I suggest that the elements of the content of God's sense-experience are all the sensory fields, considered as wholes, of the experiences of the indefinitely many individual finite subjects, the structure of His sense-experience consisting in the relations between these wholes. I would further suggest that these relations are what could be described in equations identical with, or developments of, or analogous to, the tensor equations of mathematical physics. These equations have been elaborated in a comparatively modern branch of mathematical analysis, and, so far as physical science

is concerned, they summarize in a highly condensed and elegant manner the structure of the physical Universe (which is, in fact, the field of sense-experience) from the 'points of view' of all possible 'observers.' They express, in fact, a kind of synthesis of the latter. It is not possible, of course, for a finite individual to apprehend immediately the universal field the structure of which is summarized or expressed synthetically in these equations. But this may be what God apprehends immediately in what, for Him, corresponds to sense-experience. I remember that Eddington says somewhere (the particular reference escapes me) that, to apprehend immediately the reality whose structure is expressed in tensor equations, a kind of 'revolving brain' would be required, or words to that effect. Perhaps God's apprehension is akin to this; but the 'revolving brain' is metaphorical and would, in the case of God, be replaced by His cognitive activity functioning in the universal and synthetic sense-experience arising from His peculiar dual relation to the world of transcendence and immanence.

I doubt if it is possible for human beings to go much farther than this in attempting to form some conception of the nature of God's sense-experience or its analogue. But whether there is anything or not in the particular suggestions I have made above regarding this, I feel that any attempt to form such a conception must be along some such lines as I have indicated.

Before proceeding to consider types of God's cognitive experience other than that which corresponds to the sensory, there is one matter the discussion of which can no longer be postponed, and that is the question as to whether God is a personal being. It is clear that the attributes I have already been led to postulate (explicitly or implicitly) as characterizing God are of such a nature as would make it difficult to consider Him to be at a level of subjective being below the personal. But some philosophers would go farther than this and attribute to Him a type of being which they call 'supra-personal.'

I think it would probably be generally agreed that the necessary condition for a subject to be a 'person' is that he should be not merely 'conscious,' but also 'self-conscious'—that is, that he should form in imagination and conception the idea of himself as an individual existent and should, as James Ward says, be able to think and talk

intelligibly of "Me and Mine." [1] As I have already indicated in discussing the significance of the idea of a personal devil, personality is susceptible of development, and progress in this development can be regarded as consisting in an increasing degree of harmonious integration of the 'inner life' of thought, emotion, and purpose, an integration which will be reflected in the individual's reaction to, and action upon the 'outer world.'

In the last chapter I advanced reasons for believing that God exists based on the unity of reality and on certain observed facts, which might well be indicative of a universal purpose, together with certain other facts relating to the experience of human beings which could be made more intelligible by postulating the existence of God. I would now go farther and assert that, while the bare fact that reality is a unity, though seeming to require the universal immanence of a single subjective entity, does not necessarily require that entity to be personal, the way in which the unity of reality is actually experienced becomes more intelligible if we assume that this entity is in fact personal; and this conclusion is reinforced by the consideration that attribution of purpose to God, and any idea of God as a being whose existence can guarantee the ultimate realization of human aspirations, are meaningless unless God is regarded as a personal being. But it is an altogether different matter if we begin to talk of God as 'supra-personal.' It is true, as I have said, that different levels of personal development exist up to the completely harmonious integration which is the perfect personality; and it is also true that a person may possess the various qualities of mind, intellectual and 'moral,' in varying amount. But all these are differences of degree and not of kind. A subject may, of course, have attributes different in *kind* from that of personality, but I can see no meaning in the idea of 'supra-personality' as an attribute which somehow includes the essence of personality and at the same time transcends it. There is, in fact, a certain finality about personality. A subject either is a person or he is not; and if he is, his personality may develop through differences of degree up to the complete and perfect personality. But that is the end or limit; just as it is the end or limit when an ellipse becomes a circle. The ellipse cannot become any

[1] Cf. *Psychological Principles* (Cambridge University Press, 1920), p. 464.

more circular, nor is there such a thing as 'supra-circularity' to which it can attain. One cannot, of course, set any limit in imagination to the scope and variety of personal experience, but, however great this may be it is still the experience of a person and not of a 'supra-person.' I therefore conclude that reality becomes more intelligible if we postulate the personality of God, but that no meaning can be given to the idea of 'supra-personality,' nor is this idea in any way necessary. The possibility of a perfect personality, in the sense I have defined, is all that is required.

In passing on to consider the cognitive aspect of God's experience at levels higher than the sensory and perceptual, I shall not pause to discuss the analogue to what we ourselves experience as mental imagery of various kinds, but will only remark that we may suppose it to be related, in God's experience, to what corresponds to the sensory, in a manner analogous to the relation between sensation and imagination in human experience. But I will take up more fully the question of the higher cognitive levels corresponding to intellection, conceptual or abstract thinking, or whatever we like to call it. The first point I would make is that all intellectual processes are fundamentally intuitive or immediate. As Spearman has pointed out,[1] intellective cognition consists in the eduction of relations or of correlates, that is in the apprehension of relations between given entities (which may be concrete or abstract) or the apprehension of entities standing in given relations to given entities. In every case there is a stage at which the apprehension is immediate—that is, the subject either apprehends or he does not. For example, in the case of the simplest intelligence tests it is not possible to *explain* how to give the correct response—either the subject sees it or he does not; and, although at higher levels it may be possible to analyse what is given into simpler terms, there comes a stage at which the analysis cannot be carried farther and apprehension occurs either immediately or not at all, while the principles in accordance with which the analysis is carried out are themselves apprehended immediately if at all.

There is an enormous range among different individuals in regard

[1] Cf. *The Nature of 'Intelligence' and Principles of Cognition* (Macmillan), chapters v–viii.

to this capacity for immediate apprehension. In simple minds it may be possible only in connexion with entities at, or but little above, the perceptual level, and may be limited generally to two-term relations. But in the case of a Newton or an Einstein immediate apprehension may and does occur of entities and relations (including multiple relations or relations between more than two terms) which are themselves highly abstract and which synthesize wide fields of experience as "thought going on in sheets," and there appears to be no reason to set any definite upper limit to the possibilities of this, until we reach the idea of a mind apprehending in one immediate intuitive conceptual synthesis the whole of truth as regards both the actual and the possible. We may suppose the cognitive aspect of God's experience at the highest levels to attain this completeness, and it is evidently linked with the completeness of His cognitive experience at the lower levels which has already been considered.

So far as God's 'knowledge' is concerned, there would therefore be (according to the view I have tried to develop) on the one hand a complete synthesis of all experience at the sensory and perceptual level, in some such form as I have indicated, arising from the fact that God, as immanent, shares in all experience, while, as transcendent, He interacts with the plurality of individuals and so has experience of their objective manifestation; and, on the other hand, a complete conceptual synthesis in knowledge of all truth. We can, I think, form some understanding of this through the analogies I have quoted, though we cannot imagine it, and it may be that the two syntheses to which I have referred are themselves combined in God's knowledge in a single ultimate synthesis. In any case, if the general view I have outlined were accepted we could properly describe God as 'omniscient.'

II. *Conative.* We come now to consider what, in God's experience, corresponds to the conative aspect of the experience of finite individuals. In the case of the latter, 'conation' is the name given to the effort or striving which, at the lowest levels, is directed to securing or retaining what is pleasurable, in a crude and immediate sense, and to avoiding or removing what is painful. At the highest levels conation develops into purposive, planned activity directed in accordance with a definite idea, or system of ideas, towards achieving something which

is desirable to the individual concerned—desirable in a sense which goes beyond simple and transitory pleasure, and consists in that fuller and more stable and permanent condition characterizing the fulfilment and harmonious adjustment which are the essential features of happiness. In the next section I shall discuss the tonal aspects—pleasure and pain and their derivatives—which determine conation, but here I am concerned only with conation itself.

I have maintained that the activity of each individual subject is directed, implicitly or explicitly, towards the achievement of happiness, that is to what will satisfy his nature as fully as possible, and have tried to show that the achievement of individual happiness requires that the interaction between individuals should be harmonious, as reality is a universe. I have pointed out that individuals often aim at something which they think will satisfy them fully when in fact it will not, a common reason for this being that their aims ignore, or even involve, the unhappiness of others; and I have suggested that, in such cases, we should not regard the individuals concerned as 'evil,' in a sense based on the ultimately indefensible idea of moral responsibility, but as 'foolish,' that is lacking in wisdom, the knowledge of how to attain true happiness.

In the case of God, however, if, for the reasons put forward in the last section, we attribute to Him omniscience in the sense there described, it is clear that full knowledge of the way to the achievement of universal happiness would be His, and in accordance with this perfect wisdom, His conative activity, operating within the limits imposed by the necessary structure of reality, would be directed to that achievement. But, although through His knowledge and activity God might ensure a general progress towards the ultimate end of universal happiness—a point discussed in the previous chapter—the particular circumstances of the road to that desirable state would be determined in part by the nature of the interaction between God and the finite individuals of the plurality. In so far as the latter, in their varying degrees of ignorance and foolishness, act in a manner contrary to God's eternal purpose, the way to happiness will lie, and does lie, through the experience of misery and unhappiness, which will be shared by all, including God, in some degree. As I have said in another connexion,

this unhappiness is a sign and a measure of an imperfection in the Universe (considered *sub specie temporis*), consisting in the lack of complete harmony arising from the conflict between God's purpose and, not so much the purposes of finite individuals, as what they (mistakenly) believe to be the best way of achieving those purposes.

Evidently this raises the question of God's omnipotence. This hoary problem has been so thoroughly traversed in philosophical literature that I do not propose to embark on a lengthy discussion of it. But there are certain points I wish to suggest for consideration.

In a One-Many world of 'free' individuals there will in general necessarily be some degree of conflict, not only between the various activities of the Many, but also between these and the purpose of the One. It is conceivable that the degree of this conflict might vary among all the possible worlds of this type and might, in the limiting case, be zero. I shall consider this a little later. In any case, the difference between conflict and harmony is what we experience as the difference between misery and happiness, the former including 'physical' pain, 'mental' anguish, and the sense of 'sin' which is essentially a feeling of conflict with the fundamental principle of the world. What we call 'good' is, in effect, harmony experienced as happiness; what we call 'evil' is conflict experienced as misery.

Now in the preceding chapter I gave reasons for believing that the existence of something is necessary, that existence is subjective, and that more than one subject exists, so that, since reality is a unity, it must be of the One-Many type we have been considering. Moreover, in the chapter before that, I had urged that subjects of experience were free individuals in the sense that their activities were in part self-determined and each was unique. In view of this, and the considerations of the last paragraph, I would now add that, to the extent that the existence of a world of the kind indicated is necessary and not contingent, so the existence of good and evil, in some degree, is necessary and not contingent.

Now it seems to me that the idea of omnipotence is significant only in relation to what is contingent, and not to what is necessary. For example, it is surely meaningless to inquire whether God is so powerful that he could make the proposition $2+2=4$ to be false. Therefore

since, given a world of the One-Many type, the existence of evil is necessary, it is meaningless to ask why, if God be omnipotent, He suffers evil to exist. I know it may be asked whether God could not have 'created' a world devoid of evil. But such a question involves the naïve idea of 'creation' as a kind of production of something out of nothing in a time which is somehow real. The problem of creation, or what corresponds to it, will be discussed in due course, and I will only say here that the naïve idea of creation seems to me to be indefensible.

I should therefore conclude that God's power lies, not in His ability to make the essential structure of the world, of which He is a constituent, other than it is (and, since the world is what it is and is not in time, such an idea would be self-contradictory), but in the fact that, whatever may be the detailed constitution of reality arising from the activities of the Many, God's purposes are realized. Indeed, reality being what it is—the One in the dual relation of transcendence and immanence to the Many—the realization of these purposes is necessary; and, once this is accepted, and it is seen to be meaningless to suppose that God 'might have made' anything to be other than it is, I think that we have a significant sense in which omnipotence can be attributed to God.

One point of special interest arises in this connexion. Good, which is experienced as happiness, derives from harmony between God and the Many. In conventional language we should say, not that the will of God is good, but that to do good is to do the will of God. I repeat then, that good derives, not from the nature of God's purpose or the purposes of finite individuals, but from the harmony between these. The good does not *transcend* God, and it is meaningless to say that God is good. God is—God, and there is good when our activity marches with His. As I have stated earlier, when discussing ethical theory, the attempt to define 'good' in terms of God *alone* is circular. The term acquires significant content only in regard to the relation between God and the Many.

The same applies, *mutatis mutandis*, to the idea of evil, so that it appears that ethical concepts are not ultimate. 'Good' and 'evil' are, in fact, ultimately logical (or, at any rate, metaphysical) and not ethical

concepts. In the last analysis, therefore, ethics is transcended, and is seen to be a derivative of metaphysics and logic.

Granted that the ultimate aim of the Universe, as determined by God's purpose, transcends the realm of ethics, we are nevertheless bound to ask what this ultimate aim is, apart from the fact that it is a state involving perfect and universal happiness. This raises the general question of the relation of God (especially as personal) to the rest of the world, and the particular problem of evil. But before discussing these I will briefly consider the third aspect of God's experience, that which corresponds to 'feeling-tone' in the experience of finite individuals.

III. *Tonal.* I have already referred to the fact that, in finite experience, the aim of activity, at any rate in the more immediate and 'short-term' sense, is determined by results in terms of pleasure or pain. Some psychologists (notably McDougall) have denied this, holding that the activity of an individual is determined by certain natural or innate 'propensities' which are such that, if the aim of the activity is achieved, pleasure occurs, while if this aim is frustrated pain (or, at least, 'unpleasure') occurs, so that pleasure and pain, or unpleasure, are mere 'by-products.' The point seems to me to be a purely verbal one. So far as I am aware, it is not suggested that, in any circumstances, successful achievement of the aim of activity resulting from a propensity inevitably leads to pain, or unpleasure. Therefore to say that there are natural propensities resulting in activities which lead, if successful, to pleasure, and, if frustrated, to pain, seems to amount practically to no more than saying that subjective activities are such as to produce pleasure if successful, and pain if unsuccessful—which is, in effect, equivalent to saying that activity is determined by results in terms of pleasure and pain.

It is, perhaps, not unreasonable to suppose that the tonality of God's experience is determined by the relation of His activity with that of the Many, as individuals and as a whole. In so far as the relation is one of harmony, God might be held to experience the analogue of pleasure—something which can only be named, perhaps, by some such term as 'joy.' In so far as the relation is one of conflict, God would experience what might be called 'suffering,' the analogue of the pain

of finite beings. Joy and suffering would be experienced by God, not only as a transcendent being interacting with the Many, but also, in virtue of His immanence, as a sharing in the happiness or misery of all finite individuals arising from the harmony or conflict of their relations with one another and with Him. The tonality of His experience would be a synthesis of these two aspects, and we have here, perhaps, the basis of the Christian idea that God shares in, or 'takes upon Himself,' our joys and sorrows.

I feel that little can be added on this point, and I will therefore pass on to consider the question of the general relations of God to the realm of the many individual subjects.

God and the World

The basic principles I have insisted on throughout my argument are that, given a reality which is a unity-in-plurality and the individual constituents of which are experiencing subjects, it follows (from the nature of subjects as we know it through realization of ourselves) that happiness is the universal aim and (from the structure of reality as a unity-in-plurality) that this happiness comes only through the *harmonious* interaction of all individuals—conflict is the negation of it. God Himself is no exception to this. As subject we must suppose that He desires that fulfilment which is experienced as happiness, and this is attainable only through the fulfilment or complete satisfaction of finite individuals. God therefore desires the happiness of all. I suggest that the relation thus implied between finite individuals on the one hand, and between them and God on the other, is the metaphysical ground of what we experience as love, and of what we call the 'love of God' for us. In finite experience love is frequently marred by many unfortunate accompaniments, but these arise, not from the nature of love itself, but from the imperfections of individuals due to ignorance and foolishness. Stripped of these accompaniments, love is seen to be, and felt to be, the supreme manifestation of the fact that the happiness of any individual is essentially bound up with the happiness of others. The characteristic features of the experience of love exhibit an emphasis on unity in duality, or plurality, and on the well-being of

the loved ones as well as of those who love. Each finds fulfilment in others. The fundamental urge is towards the union and community of individuals. Thus, in the experience of love we find a structure which is the very pattern of what is, and necessarily is, the structure of ultimate reality. It is true that, in finite experience, love tends to be focused on a limited number of individuals—it may be, as in the experience of love in relation to sex, on one individual alone. But this is only because we *are* finite and therefore can only attain to some comprehension of the possibilities of love as, perhaps, the chief factor in perfect happiness, through a limitation of object corresponding to our own limitations as finite beings. But, in the higher stages of personal development, there is an increasingly wide reference in the experience of love, which may be supposed to manifest its highest expression in the universal love of a personal God.

I must now turn to another ultimate question which many may have felt to be lurking in the background all the time. I have continually spoken of the achievement of perfect universal happiness, experienced in the completely harmonious activity of God and the Many, as the end inherent in reality. But what exactly is the nature of this activity? Clearly it must be an end in itself which gives rise to happiness without reference to any further end—a state of active being for its own sake. In endeavouring to comprehend something of its nature we can, as always, be guided only by what we observe in our own experience. Here we find, I think, two—and only two—types of activity which may properly be regarded as ends in themselves.

First, we have creative activity manifested chiefly in the intellectual and æsthetic fields. In its conative aspect this consists in what can, perhaps, be most generally described as the production or organization of certain experience-patterns; in its cognitive aspects it consists in the contemplation or 'appreciation' of such patterns. Tonality is, of course, associated with both aspects. It is true that the patterns may sometimes be instrumental to the creation of other patterns, but they are also enjoyed (through their production or contemplation) for their own sakes, and there is a stage where the creation of patterns is enjoyed only for its own sake and is not instrumental to, though it may be

accompanied by, the creation of other patterns. Secondly, we have the active development of satisfying personal relationships—a creative activity of a high order. Here, again, the development of such relationships may be enjoyed for its own sake and may also lead to further developments in the relation-pattern.

But the main point I wish to make—a point to which I referred in my second chapter—is that the ultimate state of subjective being can, and should, be imagined, not as something stagnant, but as a dynamic state of activity, consisting in the creation of patterns and relationships such as I have described, enjoyed for its own sake and carried on *in complete freedom from conflict or disharmony*, so that it is experienced as perfect happiness. We cannot, of course, do more than dimly imagine the nature of this state, and can only regard it as analogous to, and perhaps the ultimate development of, what is experienced by artists, by thinkers, and by those who have a genius for sympathetic and constructive personal rapport. It is, however, worth noting that, in our own experience, the two types of experience-patterns we have been considering—the personal and the (comparatively) impersonal—are by no means entirely separate but overlap, and it is possible that the relationship between them might become closer until, in the ultimate state, they merged into one another. All activity is inter-subjective, and, for example, the artist himself works in 'material' media which are manifestations as I have maintained, of subjective—though presumably not, in general, personal—beings. What corresponds to such media in the ultimate state? Indeed, more generally, what becomes of those beings manifested in experience as the sense-data from which we construct the concept of material things? I shall consider this question further in my next chapter.

Turning from one extreme to the other, we must pause for a moment to consider the problem of creation. The consideration will be very brief, for it seems to me that the solution of the problem of creation is—that there is, in fact, no such problem. For the idea of creation implies that of a God existing as a solitary being *in* a real time at a later instant of which He produces, by an act of will, other beings. Now, apart from the difficulty, to which attention has already been drawn, of conceiving reality as consisting in a single individual sub-

ject, it is clear that, if indeed there were such a reality, there could not be such a thing as a real time in which the single individual existed; for time, even as an abstract entity, derives only from certain relations. Thus there might be elements *within* the experience of the solitary individual which, by analogy with our own experience, might appropriately be called 'temporal,' but there could not be a time-series independent of, and, as it were, 'external' to him. Hence there could not be such a thing as creation, as commonly understood. What we have instead of creation is the fact that the existence of God is necessary to the existence of the Many—the converse also being true—while the immanence of God in the Many is analogous in some ways to the conventional idea of God's 'sustaining,' as well as creating, the world. But there is no temporal implication in all this. I must, however, say a final word about time in my next chapter, especially as I have, on occasion, to avoid circumlocution, spoken in temporal metaphors of non-temporal things, and this point must be cleared up.

Finally, there is the so-called "Problem of Evil." Put rather baldly, this is generally understood to be the question as to why God, if He is good and omnipotent, permits evil to exist in the world in the form of pain, misery, and 'sin.'

It will, I think, be clear that this question takes on a different form in the light of what has been said about the relation between 'good' and 'God,' and about what can be meant (if anything) by the 'omnipotence' of God.

I have tried to show that the statement that God is good is not significant. God transcends the good, which arises from harmony between God's purpose and activity, and the purposes and activities of finite beings. On the other hand, if reality has the structure which I have described, and which seems to be necessary, God is omnipotent in the sense that His purpose is realized; but things are what they are, and it is meaningless to suppose that God 'could have' made them other than they are. The problem of evil should therefore be stated in this form: "What is evil, and is it necessary?"

I have already attempted to answer the first part of this question, and, to some extent, the second. Evil is what is experienced when the activities of finite beings conflict with the activities of God. As regards

the question of its necessity, I have suggested that, in a world consisting of many free individuals, it seems inevitable that some conflict will occur. Existence is essentially subjective, and individual subjects are essentially unique. Hence it is *a priori* probable that conflict will occur, and, if there were many universes possible within the scope of the general conditions limiting the nature of a universe, the distribution of the amount of conflict, and therefore of the amount of evil, among these possible universes could be determined, if by anything, only by *a priori* principles of probability. In the limiting case one might have a universe in which the amount of conflict and evil happened to be zero.

But is the conception of a set of possible universes with varying amounts of evil really valid? I doubt it, for I feel that such a set of so-called universes would be but abstractions from the one real Universe which includes within itself all states from complete evil to complete good—that is, in statistical metaphor, from complete negative to complete positive correlation between the activities of God and the activities of the Many. The change from the one to the other through intermediate states corresponds to what we call 'progress.' But this raises certain ultimate issues, especially regarding the interpretation of the temporal metaphors, which we inevitably have to use, in terms of a 'timeless' reality. I can deal with these issues, after summarizing the results of this chapter, only in the course of a restatement of my whole thesis in logical order, which I shall attempt in the next and final chapter, where I shall also try to clear up a number of points of detail.

Summary

In this chapter I have developed, necessarily in a very tentative way, a theory of the nature of God, and of His relation to the rest of the world, in the light of the preliminary results arrived at in discussing, in the previous chapter, the problem of God's existence.

I have postulated that God is a substantial, and therefore subjective, existent, and that accordingly His existence consists essentially in experience. I have suggested an analysis of this experience under the traditional aspects of cognition, conation, and feeling-tone—a con-

venient classification which has long been accepted in psychology, and which, in spite of modification in detail, is still generally adhered to in principle—while remembering that these three aspects are integrated and inseparable in actual experience. It is recognized throughout that, in speaking of any element in God's experience, we can only refer to whatever corresponds in the latter to that particular element in human experience; we cannot imagine just how it is actually experienced in the concrete by God, though we may perhaps form some idea of its structural form.

Taking the cognitive aspect, I noted first the distinction between the 'lower' levels, which are mainly sensory in character, and the 'higher' levels culminating in developments of imagination and conceptual thought.

Sensory experience is regarded as experience arising from interaction between the individual concerned and other subjects. In this aspect God's experience will be determined by His dual relation of immanence and transcendence to the many finite individuals, and His resulting 'ubiquity' would seem to lead to the conclusion that there is not, in His experience, anything corresponding to the subconscious sensory level. At the same time He will, as it were, share in the sense-experience of all individuals, a process which we cannot imagine or define exactly, though the analogy of the mind-body relation may be of some help in this respect.

In brief, then, we might say that, as transcendent, God perceives reality as a whole from a 'universal' point of view, while, as immanent, He perceives it from the many points of view of finite individuals, though we must suppose these two aspects to be synthesized. I suggested that, whereas in finite sense-experience the elements consist of sense-data standing in spatio-temporal relations, in God's 'sensory' experience the elements might consist of the sensory fields, as wholes, of all the finite individuals, the structure of this experience being determined by the relations between these sensory fields. Just as the spatio-temporal relational structure of finite sensory fields is described by the ordinary equations of physical science, so the structure of God's sensory field may perhaps be described by something in the nature of the tensor equations used in modern mathematical physics, and God

may apprehend immediately the 'universal' field the structure of which is summarized or synthesized in such equations.

I then went on to give reasons for believing that, in view of the attributes which it already seemed necessary to ascribe to God, we were bound to regard Him as being personal in nature, but I held that the further claim, made by some philosophers, that God is 'supra-personal,' cannot be sustained and, indeed, while the concept of a personal God makes reality more intelligible, the concept of a supra-personal God is really meaningless.

Passing on to discuss the cognitive aspect of God's experience at the higher levels, I remarked that there seemed little to be said regarding imagery except that we might suppose it to be related in God's experience to the sensory in a way analogous to the relation between sensation and imagination in human experience.

As regards the conceptual level, I first pointed out that all intellection is fundamentally immediate or intuitive, consisting essentially in the apprehension of relations and relata. The range of this capacity for immediate intellective apprehension varies enormously as between different individuals, and there seems to be no reason for assigning a limit to the complexity or abstractness of relational structure which may be immediately grasped until we reach the idea of a mind apprehending in one intuitive conceptual synthesis the whole of truth. God's cognitive experience at the higher levels may be supposed to exhibit this completeness, which will be linked with the completeness of His cognitive experience at the lower level. God may therefore properly be regarded as omniscient.

Taking next the conative aspect of God's experience, I pointed out that, while at the lowest levels conation is determined by simple considerations of pleasure and pain (I afterwards dealt with objections to this idea raised by McDougall and others), at the highest levels it develops into purposive, planned activity directed ultimately to that fulfilment and harmonious adjustment which is experienced as happiness. But whereas finite individuals, in their ignorance and foolishness, may be mistaken in their beliefs as to what will make them happy, omniscient God is under no such limitations. Through perfect knowledge and wisdom, His conative activity, within the limits imposed by

the necessary structure of reality, would be directed towards universal happiness. But, although He could ensure general progress towards the latter, the circumstances of this progress would be determined by the nature of the interaction between God and the Many. Where there is conflict in this interaction, the way to happiness lies through the experience of misery and unhappiness, which will be shared by all, including God, in some degree.

In a One-Many world of 'free' individuals there will in general necessarily be some degree of conflict (a point to be further investigated in the final chapter), and the difference between this conflict and harmony is experienced as the difference between happiness and misery of various kinds. 'Good' is harmony experienced as happiness, 'evil' is conflict experienced as misery.

I proceeded to give reasons why the existence of good and evil, in some degree, might be regarded as necessary and not contingent, and since the idea of omnipotence is significant only in relation to the contingent (and not to the necessary), I suggested that God might be described as 'omnipotent,' His power lying, not in ability to 'have made' the essential structure of the world other than it is, but in the fact that His purpose is necessarily realized.

It appeared, then, that good derives, not from the nature of God's purpose, but from harmony between God and the Many. The good does not, therefore, transcend God, and it is meaningless to say that God is good. 'Good' and 'evil' are, in the last analysis, logical or metaphysical concepts, so that ethics derives from logic and metaphysics.

I then suggested that the tonality of God's experience might reasonably be supposed to be determined by the relation of His activity with that of the Many. When there is harmony He experiences 'joy,' when there is conflict He experiences 'suffering.' These experiences would be a synthesis arising on the one hand from the interaction of God, as transcendent, with the Many; and, on the other hand, from His sharing in the happiness or misery of all individuals.

As happiness is the ultimate aim of all subjects of experience, God, as subject, would desire happiness, and, as this comes only through the harmonious interaction of all individuals, it would follow that God

desires the happiness of all. The relations thus implied among the Many, and between them and God, might therefore well be the metaphysical ground of what we experience as love, and of what we call the 'love of God' for us. Love, in its essence, and apart from its sometimes unfortunate accompaniments in human experience, manifests above all the dependence of the happiness of an individual on the happiness of others. As experienced, it exhibits unity in duality, or plurality, the fundamental urge being towards the unity and community of individuals. In the experience of love, therefore, we have the very pattern of the necessary structure of ultimate reality. Owing to the limitations of finite experience, love, as we know it, is commonly focused on a limited number of individuals, but the higher stages of personal development foreshadow that universal love which is the attribute and aim of a personal God.

I then went on to point out that the nature of that completely harmonious activity of God and the Many, which alone can give rise to universal perfect happiness, must be that of a state of active being for its own sake; and I suggested that we have some experience of what this might be in the creative activity which is manifested chiefly in the intellectual and æsthetic fields, and in the active development of satisfying personal relationships. In both cases the creative activity consists essentially in the production and contemplation, or appreciation, of certain experience-patterns. The ultimate state of subjective being might therefore be conceived as something dynamic, not stagnant, enjoyed for its own sake and carried on in complete freedom from conflict or disharmony so that it is experienced as perfect happiness. The two types of experience-pattern—the personal and the (comparatively) impersonal—overlap in our experience and might ultimately merge into one another. Here I remarked that a point still to be cleared up was the ultimate destiny of what is manifested in experience as the sense-data from which the conception of the material world is constructed, and, in particular, the question as to what ultimately corresponds to the material media in and through which creative activity, as we know it, frequently works.

I next referred briefly to the idea of creation of the world by God, suggesting that, as the idea involves the existence of a solitary God

existing in a real time, at a later instant of which He produces other beings by an act of will, it is, in fact, an indefensible idea. Instead of 'creation,' as commonly understood, we have the fact that the existence of God is necessary to the existence of the Many—and conversely—while the immanence of God is in some ways analogous to the conventional idea of God's 'sustaining' the world.

Finally I considered the Problem of Evil, suggesting that, in its traditional form of the question why, if God is good and omnipotent, He permits evil, it is meaningless, as the analysis of the ideas of 'good' and 'omnipotence' shows. Instead, the problem should be stated in the form: "What is evil, and is it necessary?" I had already tried to answer this question. Evil is what is experienced when the activities of God and the Many conflict, and, in a One-Many world of free individuals, some degree of evil appears to be necessary. It might be that there were many possible universes, with varying amounts of evil down to zero, but I suggested that such a set of so-called universes ought perhaps to be regarded as but abstractions from the one real Universe, which includes within itself all possible states from complete evil to complete good, the transition from one to the other corresponding to what we call 'progress.' But this raised issues to be dealt with in my final chapter.

CHAPTER VII

Reality and an Intelligible Universe

IN THE FOREGOING CHAPTERS I HAVE TRIED TO BUILD UP A CONCEPTION of the ultimate nature of reality, starting, as all inquiries of this kind must start, from the actual experience of individuals. It has been my aim to make this conception such as would render the Universe intelligible to beings like ourselves. I do not think it is possible logically to deduce the exact nature of reality from what is immediately disclosed in experience, but it may be possible to form an idea of it which, when considered in relation to experience, satisfies us intellectually to a considerable degree, if not completely.

In this final chapter I wish to reverse the process, and, starting from the concept of ultimate reality which I have developed, try to show how this can be regarded as an intelligible, and (I hope) reasonably logical, ground of what we know of the world through our own experience.

The Nature of the Existent

I take as valid a distinction made between 'substance,' or 'substantial *existence*, and '*subsistence*,' which is the type of being of such things as relations, propositions, and so on. The essential type of substantial existence is a subject of experience, for such an entity alone has being-for-itself and therefore being-in-itself.

We cannot, of course, separate the experiencing subject from what he experiences, but the fundamental fact is that experience is organized in unitary structures, and no amount of 'explaining away' can dispose of the unity and individuality of these structures. 'I' have 'my' experience, and you have yours; and the two are definite, distinguishable, and separate unities, though their structures are related, and the unity of each cannot be broken into disconnected fragments.

In the abstract, the subject or 'I' is the unifying principle which

focuses and binds together, as it were, the individual experience. In the concrete, it is what each of us realizes as the immediate fact of self-existence. As experience, in all its forms, is characterized in part by what may appropriately be called 'doing,' in a wide sense, it is valid to describe the subject as 'active.' Indeed, it is difficult to imagine a substantial existent which is not active—if it *does* nothing, it surely *is* nothing.

The content of experience—including what is, more especially in connexion with cognition, called the 'object' of experience—is determined by the particular form which is taken by subjective activity, this being dependent in part on interaction with other subjects. The object of sensory experience can thus be regarded as the way in which other subjects are manifested to the individual subject concerned.

The main point which emerges from the foregoing is that, when statements are made about experiencing subjects, the reference is to these unitary experience-structures, the existence of which as concrete and definite individuals is the fundamental characteristic of reality. Whatever form of words we may use in describing them—and some philosophers have spoken of them as mere bundles or collections of sensations, images, volitions, etc., or as cross-sections of 'neutral elements' taken in a particular way, as if that disposed of the existence of the subject as something real—the fact which I have emphasized remains as a reality which is ultimate and cannot be 'explained' away. Moreover, statements in terms of these unitary entities are explanatory in a genuine sense (for we *realize* what an experiencing subject is since each of us is one) and are not mere descriptions (such, for example, as scientific 'laws') of the way in which things are observed to behave.

The Structure of Reality

In discussing the general idea of the structure of reality which I have tried to develop, and examining the question as to how far it could be regarded as an intelligible ground of experience, I shall, for convenience, indicate the unitary experience-structures to which I have just referred by the Leibnizian term 'monads.' The monads, or interacting (and so experiencing) subjects, will differ, however, in certain important respects from the way in which Leibniz conceived

them, notably in the fact that they are not, as Leibniz described them, 'windowless' in the sense that each is independent of the others so far as direct interaction is concerned, though the perceptions of each are kept 'in step,' so to speak, with those of the others by a 'pre-established harmony' due to the action of God.[1]

Reality, as I conceive it, is a plurality of interacting monads together with a supreme monad, God, who is immanent in all the individuals of the plurality, but also transcends, and is not merely identical with, the plurality. I share the views of those philosophers who find difficulty in conceiving a mere plurality of distinct individuals who nevertheless interact in such a way as to make the world a closely interrelated, organic unity. I feel that this patent unity in the world can be made intelligible only by the conception of a single supreme monad, immanent in the many, which mediates their interaction.

But, though this may be my primary reason for conceiving reality as a unity-in-plurality of the kind described, we have to inquire how such an ultimate structure of reality might be expected to manifest itself in experience. Now the monads are to some extent free and independent individuals, each being essentially unique, and their activities will be, to this extent, independent and uncorrelated, both in relation to one another and in their relation to God. Let us examine how the structure of this universe of partially independent active monads would be reflected in the structure of the experience of each, first as regards that part of experience with which physical science is concerned, and then as regards the wider field which includes the 'moral' and ethical aspects and the whole state of being as experienced by the individual concerned.

The first point to note is that, in view of the uniqueness and relative independence of the monads which constitute ultimate reality, it would not be possible to deduce the exact nature of any part of reality from even the fullest knowledge of some other part.[2] This would be

[1] Cf., for example, R. Latta's *Leibniz*; *The Monadology* (Oxford University Press, 1898), pp. 39 ff.

[2] That is, the fullest knowledge possible within the limitations of an analysis into abstracted (and therefore somewhat modified) 'parts' of what is, in the concrete, an indivisible unity. It is because of these limitations that the relations between 'events' are *probability* relations, but I am suggesting that the reasons for the particular form taken by the latter are as described in this and following paragraphs.

reflected in individual experience as the impossibility of determining with certainty from the occurrence of any given event or group of events in that experience, whether any other specified event occurs or not. But it does not follow that our ignorance in this connexion would be complete. For it would not be unreasonable to assume that the independent activities of the monads would be manifest in experience as equivalent to the operation of a large number of (at any rate, partially) uncorrelated factors. The relations between events determined by such factors would be probability relations; that is, given the occurrence of a certain event, or events, it would be theoretically possible to deduce the *probability* of the occurrence of any other specified event. Now the least that can be said about the way in which the probability values of events are distributed is that the mathematical functions defining this distribution (1) must have some *general* form, and (2) must be expressed in terms of certain variables or parameters which determine it within the limits of this general form.

We have, however, no reason for assigning any one general form to the distribution function beyond the fact that the probability values are themselves determined ultimately by the independent monadic activities. Hence we may suppose, not only that they are probability values, but also that they are distributed in accordance with the normal curve of distribution (corresponding to what is commonly called 'chance' distribution), which is not a special characteristic of a particular universe, but a purely logical consequence of the operation of many uncorrelated factors. But the various values of the variables entering into the distribution function would be determined by the nature of the Universe, including the fact that the operative factors are only partly, and not wholly, uncorrelated.

The simplest distribution function which satisfies these conditions is $p = e^{-ks}$ or, more generally, $p = e^{-\int k ds}$, where p is the probability value, and k and s are the variables which determine this value. In Chapter III I have tried to show that from this very simple assumption it is possible to deduce the form of all the main general results of modern mathematical physics; and in the course of the investigation it appeared that the abstract spatio-temporal framework of physical

science is really equivalent to a representation of the field of the probability values of events. It was of particular interest to note that the minimum number of variables required to specify the probability distribution function—namely, two—corresponded to the two minimum requirements for specifying a metrical spatio-temporal framework—namely, a mesh-system and a gauge.

In an experience, therefore, there may be said to be manifest the statistical effects, or 'mass results,' of a large number of factors. But it will be remarked that, in the physical field which we have been discussing more particularly, there is apparent what is commonly regarded as a greater degree of regularity and routine than in other fields of experience. Now we must suppose the monads to vary over a wide range in their level of subjective development—a range which is manifested in experience by the difference between the most highly developed human personalities and the lowest forms of 'animate' being, and, ultimately, 'inanimate' being.[1] Physical science deals mainly with the last, which, as I have said elsewhere, I regard as the manifestation of the most rudimentary monadic types which, being at so low a level of 'mental' development, exhibit a considerable amount of routine uniformity in their activity. In the physical field, therefore, we are observing the manifestation, not only of statistical assemblages of individuals, but of individuals who tend to act with a considerable degree of routine behaviour or 'habit.' [1] In such cases the distribution of probability values will be narrow, and concentrated closely round certainty ($p=1$), thus giving rise to the appearance of greater regularity in the physical field.

I conclude, then, that the nature of the facts investigated by physical science is what we might expect it to be if the structure of reality were such as I have postulated. But there is a general tendency in the world for monads to develop steadily from the lower to the higher levels of mentality. We see this strikingly illustrated in the development of the human individual and of the human race, and, more generally, in the evolution of all species. According to the theory I advocate, it is clear that 'consciousness' exists at all levels, even down to 'inorganic' or 'inanimate matter,' which were concepts constructed from the way in

[1] Cf. *Spiritual Pluralism*, pp. 11, 53.

which we experience our interaction with monads at the most rudimentary mental level. Now, as the level of mentality rises, monadic activity is characterized by a steadily increasing spontaneity and originality and a steadily decreasing amount (proportionately) of routine response or habitual behaviour. Hence we may suppose that there is in the world a steady general tendency towards increasing spontaneity in monadic activity, and this will be reflected in steadily *decreasing* probability values of observed events in general, 'events' being the way in which monadic action and interaction are experienced.

Now I have tried to show, in Chapter III,[1] that such a general decrease in probability would appear in physical analysis as the Second Law of Thermodynamics and the Principle of the Expanding Universe, which are thus seen to be connected. I suggest that this provides additional confirmation that experience in the physical field is such as might be expected on the theory of reality I am assuming. The physical principles to which I have just referred may, indeed, embody observed facts which signify a general monadic development from the lower to the higher levels, culminating in what would be experienced as the 'extinction' of the 'material' universe but, at the same time, the progressive development of the 'mental' universe. I am here using the terms 'material' and 'mental' in the conventional sense, but I think my meaning will be clear. According to my theory, the Second Law of Thermodynamics is an expression of the fact that the probability of occurrence of all physical events (or partial events) diminishes steadily and tends ultimately to zero. In such an ultimate condition of the material universe, no physical states would occur; that is, there would be no physical events within the experience of individuals. This would be true if all monads, following what appears from observation to be a universal *tendency* of 'mind,' had progressed beyond the rudimentary level of 'mental' development which, in monadic interaction, is the ground of the perception, in beings at our level of development, of the nearly regular and uniform processes from which we construct the concept of the 'material world' or of 'physical events.'

[1] See pp. 75 ff.

As I have suggested in another connexion, there seems no reason to assign any definite upper limit beyond which development cannot progress, except in so far as such a limit is implied in the completeness of God's experience, a matter I discussed in the last chapter. It might therefore be that ultimately reality is a universe of interacting monads at what, relative to human nature, would be a very high level of development, a level which would include personality as one of its most important characteristics. All creative effort would then arise from interaction between personal beings, and it was this that I had in mind when I said that in the ultimate stage creative activity corresponding to that which occurs at the human level in the intellectual and æsthetic fields might merge into the creative activity which consists in the development of personal relationships. This merging would not involve complete identification, especially, perhaps, in the intellectual field, but it would mean, for example, that creative expression of an æsthetic character would take place through the medium of interaction with beings at a high, and not a low, level of development.

We cannot, of course, imagine what experience at this ultimate level would be like, but this does not invalidate the conception. For it seems clear that, even in the world as we know it, there are beings whose experience is almost certainly of a kind so different from our own that we cannot imagine its nature.

We might perhaps describe ultimate experience as being, on the 'abstract' side, of the nature of pure imagination and intellection, altogether transcending the sensory as we now experience it, and, on the 'concrete' side, as a kind of rapport between personal beings who, as it were, 'play upon' one another so as to produce, in the experience of each, harmonious patterns which are enjoyed for their own sake.

Let us now consider what, in terms of actual experience, would be likely to result from the reality I have postulated in a wider field than that of the purely physical. Given a world of free monads—that is, monads who are partly self-determined—in which a supreme monad is immanent, it seems not unreasonable to suppose that the various activities in which the existence of the monads consists would result in a considerable amount of discord. A universe of this kind in which

nothing occurred but complete harmony would be *a priori* so improbable as to be virtually impossible. Now any conflict in monadic interaction, whether among the Many or between the Many and the One, must be reflected in the experience of all. This seems to me to be sufficient ground for the occurrence in experience of what we call 'good' and 'evil,' or rather, as I have maintained, happiness and misery which are the concrete grounds of the ideas of good and evil respectively, the latter not being ultimate concepts. But the determining factor is the immanence of God, the supreme monad, and the steady directive influence of His activity results in a continually increasing degree of harmony which will be experienced by individuals as progress in the establishment of the conditions making for perfect happiness, and ultimately the achievement of perfect happiness itself. I have given reasons in the last chapter for supposing that God's purpose is necessarily realized, but an essential condition for its complete realization would be the development of monads to a level at which they would be potentially capable of co-operating steadily in the achievement of God's purpose of perfect universal happiness. But only beings at the personal level would be capable of this, and it may therefore be that the necessary realization of God's purpose itself necessarily determines that there is a general monadic development from the 'inorganic' through the 'organic' to the higher levels of 'consciousness' and ultimately to personality. The results of this general development are experienced at the human level as the perception of those processes from which we construct the concept of evolution. Therefore evolution of the kind we observe may be a necessary process.

I feel, then, that what we actually experience, both in the restricted field of physical events and in the wider field including all types of experience, is just what might be expected to arise in a One-Many universe of monads. But there remain a number of points of detail to which some final consideration must be given. There are issues in connexion with the place of what we call 'time' and 'progress' in reality which I have not yet tried to resolve, and there are also certain remaining difficulties relating to the 'problem of evil.' Before dealing with these, however, I wish to say some last words about the nature of experience

in order to resolve what may appear to be certain inconsistencies in my treatment of this question in different contexts. I shall also discuss briefly the nature of the 'unconscious' in the sense of that term originated by Freud.

The Analysis of Experience

I have frequently had occasion in the course of this inquiry to analyse experience in ways which have, to some extent, differed from one another in detail (and sometimes in the kind of descriptive metaphor employed) according to the various circumstances in which the matter has arisen. I therefore feel it necessary to clear up my position in this respect so far as I am able.

I regard the unitary experience-structures, which I have called 'monads,' as the fundamental constituents of reality. While it is possible to analyse the concept of experience in somewhat differing ways, as frequently happens in such cases, these are in no way incompatible but rather a question of convenience according to the particular matter in hand. The first point I have to make, however, is that, in the concrete, the monad is one and indivisible—it is not an addition or collection of parts which are actually separable. This does not invalidate analysis, provided its limitations in such circumstances are kept in mind and the inevitable element of artificiality which it introduces suitably discounted.

The fundamental analysis of a monadic experience recognizes first in the latter a unitary principle, the substantial basis of which is called the 'subject' and referred to by the pronoun 'I' by the individual concerned. Experience is essentially dynamic. Such phrases as 'I perceive,' 'I imagine,' 'I think,' 'I will,' and so on connote a *doing*, so that I have thought it quite appropriate to follow the example of many other writers in using the term 'active' to describe the main characteristic of the subject.

Now activity cannot be purely general—in every case it must have a specific form and content. While for analytic convenience we may consider form and content separately, and even vary the precise method of separation, concretely they are no more separable than, for

example, the shape and size of a geometrical figure. This distinction between content and form corresponds analytically to the distinction between the object of experience (a phrase the meaning of which I have explained in previous chapters) and the relation between subject and object. The object and its relation to the subject may again vary in their precise definition relative to one another. Thus we may describe the form of subjective activity which is the basis, in analysis, of its relation to the object, as 'sensing,' 'perceiving,' 'imagining,' 'thinking,' 'willing,' and so on; or more generally, we may subsume these, respectively, under the two broad categories of 'cognition' and 'conation.' On the other hand, following some psychologists, we might go farther and postulate ultimately only one form of subjective activity—namely, 'attention.' All these terms are explained in works on psychology. The content of the activity, or the object of experience, will vary according to the form of the activity from which, in actuality, it is inseparable, these variations being relatively more general or more specific according to the nature of the variations in the method of classifying content as in the examples given above. But the fundamental fact is that concrete experience—the fact described by the analytic complex subject-specifically-active—is one and indivisible.

Let me illustrate by a simple example. I should postulate that what is described by (say) the sentence 'I perceive (or sense) this red patch' is something which is actually a unity not separable into concrete parts. Analytically the 'I' corresponds to the subject and the complex 'sense-this-red-patch' to the specific form and content of subjective activity in this case. We might perhaps say that 'sense' corresponds to the form and 'this-red-patch' (a part of the object of experience) to the content of the activity, but the correspondence is only a rough one, for, as I have pointed out, we can analyse in somewhat different ways. It is, of course, also true that the delimitation of what is referred to as 'I' is not precise, which brings us back to the point that the piece of experience described by 'I sense this red patch' is an indivisible unity. The foregoing is the basis of my contention that such things as in analysis are now commonly denoted by the term 'sense-data' do not exist when unperceived.

We must go one step farther. The piece of experience 'I sense this red patch,' which is in the nature of what I have described in Chapter III as a 'partial event,' is itself an analytic abstraction from a 'total event,' or rather a series of total events. But the latter, again, are not separable in the concrete, and we must finally regard the whole experience-structure constituting an individual monad as an indivisible unity.

Monads are therefore rightly described as subjects acting specifically. The particular form and content of monadic activity is determined in part by the subjective activity of other monads. This is monadic interaction. It seems reasonable to suppose that the degree of this determination by others will be greater in the case of activities such as 'sensing' and 'perceiving' than in the case of activities such as 'thinking' and 'imagining.' Indeed, this is the main ground of the difference between these various types of activity.

I have frequently spoken of experience as being the manifestation of activity to the individual concerned. I have used this form of words because of the sense in which the terms 'experience' and 'activity' are commonly used. But it will now be seen that I really regard experience, not so much as a 'manifestation' of activity, but as activity itself. The latter is, of course, characterized by tonality (that is, by what psychologists often call 'feeling-tone'), and this completes the picture of the monadic experience-structures. But there is one other point to consider —namely, the relation of the foregoing to the Freudian (and allied) concepts of the 'unconscious.'

The Unconscious

The developments which have followed the psychoanalytic theory originated by Freud, which is based on his concept of the unconscious, have shed an entirely new light on the psychology both of the normal and of the abnormal, considered as the study of human behaviour in some of its most important aspects. These developments are fully discussed in books on psychoanalysis, and they are not, in detail, relevant to the present inquiry. No one could reasonably doubt the immense value of the work of Freud and other pioneers in relation to

psychological theory and practice. But when some psychoanalysts, like some behaviourists, attempt to base a metaphysic on what are simply regulative ideas and methodological principles in the field of a special study, the case is entirely different. Psychoanalytic theory was not developed for metaphysical purposes, and it is no more appropriate to these than are the principles of physics.

On the other hand, it is important to investigate the relation of the general facts, to which the psychoanalysts have drawn attention, to the metaphysical theory which is the subject of the present discussion. The central principle of psychoanalytic theory is, broadly speaking, that the behaviour of human beings is largely determined by causes of which they are completely unconscious, and that, even when they believe themselves to be acting as a result of motives which are conscious and rational, the real motivation of their actions is something quite different and is unconscious.

The unconscious factors which influence behaviour in this way fall into two main groups. One of these consists of certain fundamental urges or 'instinctive' drives which are innate and influence the individual from the beginning, though he is unconscious of them. The other consists of factors which have been conscious at some time but, owing to a process called 'repression' which is itself unconscious, have become unconscious though they continue to influence behaviour. The factors in question are commonly described as 'unconscious wishes,' 'unconscious ideas,' and so on.

The field of the unconscious must be carefully distinguished from that of the subconscious, to which I have referred in another connexion. Perhaps the most significant difference between them is that no process of repression is involved in passage from the conscious to the subconscious, while, on the other hand, the reverse passage from subconscious to conscious generally takes place without difficulty—*e.g.*, in 'recollection.' But elements can only be recalled from the unconscious to the conscious by a long and elaborate process carried out by one who is expert in the necessary technique, and even then it is not always possible.

In considering the metaphysical implications here involved I would first point out that the common terminology of the psychology of the

unconscious is ambiguous and may be misleading. To speak of unconscious thoughts, or ideas, or desires is, on the face of it, contradictory, for I submit that it is of the essence of thoughts, ideas, and desires to be conscious, unless all these terms are arbitrarily defined in a way very different from their usage in ordinary language and in the psychology of the conscious. I am aware that some writers have discussed the possibility of the existence of 'mental events' which are unconscious and which do not form part of the content of a mind, as commonly understood, or, as I should say, of any unitary monadic experience.[1] Now, in the first place, we evidently could not know directly of the existence of mental events of this kind, and therefore we ought not to assume them unless we have very strong reasons for doing so. I know of no such reasons. Again, to speak of 'mental' events which are unconscious and also detached from any mind seems in both respects to imply a quite arbitrary use of the term 'mental.'

I therefore conclude that a statement that an action is determined, for example, by an unconscious idea cannot be taken literally. I suggest that the only meaning which can be attached to it is that the action is such as is on other occasions associated with this particular idea as a factor in consciousness, it being an essential attribute of ideas that they are conscious. If it then be asked why it is necessary to assume that, although behaviour takes place *as if* it had been influenced by certain conscious ideas, it must nevertheless be assumed that it is really being influenced by unconscious factors, the psychoanalysts would no doubt be on firm ground in replying that only on such an assumption can the observation and description of an individual's behaviour *as a whole* be made intelligible, especially as regards the phenomena of conflict.

Let us examine these conclusions in relation to the two broad types of unconscious factors I have mentioned. Taking first the repression of ideas which have been conscious, it seems to me that all that this means is that ideas which are conscious at one stage of experience are sometimes, in fact, not conscious at stages which, in temporal terms, would be described as 'later,' and that they do not occur in consciousness again in the course of any ordinary normal process. Now when

[1] Cf. Broad, *op. cit.*, pp. 375 ff.

action is influenced by a conscious idea (and I do not think it can be disputed that this occurs) the action and the idea are closely related temporarily—that is, they are either (roughly) simultaneous or temporally adjacent; or, if the reference is to behaviour over a period, the action is from time to time closely associated with the idea, though, during the intervals, the latter may be *subconscious* and not conscious. To say that action is sometimes influenced by an idea which has been conscious but is unconscious at the time of the action therefore seems to me equivalent simply to saying that, although idea and action are often closely associated temporally, this is not necessarily the case. This would imply that that form of subjective activity which consists in some specific ideation produces a tendency in the subject to act as if influenced by this ideation although the idea which is its form no longer occurs in consciousness. In other words, the unconscious factor involved in such cases is the nature of the subject as modified by previous ideation, and it *is* unconscious because the subject cannot be the object of its own cognition.

The other type of unconscious factors influencing behaviour—namely, those primal urges or drives which do not begin by being embodied in conscious ideas—can be interpreted as attributes of the essential nature of the subject, and therefore are also unconscious because the subject cannot be the object of its own cognition. To say that the subject acts in such and such a way under the influence of some primary unconscious impulse, therefore, amounts merely to saying that the subject acts in this way because it is what it is. Description of the factors influencing behaviour in this connexion is necessarily in terms of ideas which, on other occasions, may be associated with similar behaviour as conscious factors.

When there is opposition between what, in analysis, would be regarded as different unconscious subjective tendencies, or between an unconscious tendency and the activity embodied in some specific (conscious) ideation, conflict occurs with its characteristic forms of behaviour and tonality.

I do not propose to discuss here the theory of the 'collective unconscious' which is held by some psychologists. I would only remark that the concept of an 'unconscious' which is an influence in the world

as a whole, and not merely in one individual experience, is suggestive in relation to the theory that reality is a unity-in-plurality which I have been maintaining.

It seems, then, that the real value of the work of Freud and his successors lies, not in the concept of the unconscious, but in the description of what human nature is really like, the description being expressed in the form that human behaviour takes place *as if* determined in part by factors of a kind which we actually experience though the behaviour may not be consciously associated with these factors in the experience of the individual concerned. I find nothing implicit in psychoanalytic theory which is incompatible with my metaphysical hypothesis or which cannot be interpreted in terms of the latter. But during the discussion I have had occasion to make use of temporal terms, and I will now proceed to a final consideration of the status of 'time' in reality, and certain allied topics.

Status of 'Time' and 'Progress' in Reality

I should like to begin the final consideration of these matters by emphasizing again the fact that monadic experience-structures are not only unitary, but are also *unities*; that is, each monad is an entity which, however described in abstract analysis, is, in the concrete, one and indivisible and in no sense separable into a collection or addition of parts. This is important because, in the conventional analysis of an individual experience into what may be crudely called, respectively, spatial and temporal 'cross-sections,' the concrete experience which is thus analysed is actually an indivisible unity in what corresponds to the temporal, as well as the spatial, aspect in the analysis. The latter is, in effect, a conceptual description of the structure of the unity. Though this description may be in discrete terms, its actual significance is not that of a discrete entity, and when the results of analysis are interpreted in terms of actual experience it must be remembered that the latter is always a unity. Discreteness in symbols does not necessarily imply discreteness in the actuality of which the symbols are significant.

When we analyse an individual experience into events and partial

events, in the sense of those terms defined in Chapter III,[1] we find it necessary to introduce the idea of order. We can only describe experience in this way by supposing the events and partial events to form ordered sets. There subsists between the events which, in analysis, are regarded as the constituents of an individual experience, relations of the kind called 'temporal,' while between the partial events which are, in analysis, regarded as the constituents *of any one event* there subsist relations of the kind called 'spatial.' Moreover, in order to cover the facts analytically, we find it necessary to regard the temporal order of events as having a 'sense.' [2] In this connexion I am, of course, using the terms 'temporal' and 'time' in the conventional sense as commonly understood, and not in relation to the concept of 'true time' which I developed in Chapter III.[3]

The analysis can be carried a stage farther by constructing, from the ordered series of events, a series of 'instants,' which would be represented graphically by points. Between the instants of the time-series of any two monads there is (in general) a one-one correspondence. By taking classes of corresponding instants we can form the conception of a series of instants of 'public' time. But it must be remembered that the relation between the instants or the events of different monads is not of the same type as the relation between the instants or the events of the same monad.

Now the point I wish to make once again is that temporal relations are something found *within* a monad, not something subsisting between the monad and something else. 'Time' is 'in' the monads; the monads are not 'in time.' Temporality is, in fact, a characteristic of certain relationships within the structure of a monadic experience when this is described in conceptual analysis; it is *not* a characteristic of the structure of the whole reality of which the monads are the unitary constituents when this is also described analytically.

There is an analogy which is, I think, of some help here, though it must not be pressed too far. We might regard the various individual experiences as analogous to a number of maps of a whole region each of which is projected from a different point. Analysis of these maps involves the ordering of areas and points on them. In terrestrial maps

[1] See pp. 85 ff. [2] See pp. 94 ff. [3] See pp. 60 ff.

this is expressed in terms of the latitude and longitude framework. To each point on any one map there will correspond a point on any other map. But this relation of correspondence between the two points of different maps is not the same in type as the relation between two points in the same map; nor, indeed, is the relation between two non-corresponding points of different maps. Moreover, the general relationship of the maps to one another is not of the same type as the general relationship to one another of the points of one map. The maps, as units, are not 'in latitude and longitude' in the sense that the points of any given map are 'in latitude and longitude.'

I hope I have now made it clear that the status in reality of 'time' or, more correctly, of 'temporality,' is that of a characteristic within the structure of a monadic experience, as described in analysis, and not that of some actual relation among the monads themselves. In this sense it is, I think, true to say that 'time' is not an ultimate reality, for the monads are not temporal entities, and all statements or questions about monads which imply that they are temporal entities are really meaningless. But, for convenience, we may legitimately continue to put such statements and questions in temporal terms if we are careful always to interpret them in the correct way in the final result. Thus a statement such, for example, as "This monad's happiness is increasing as time goes on" really means that, in the descriptive analysis of this monadic experience, it would be necessary to say that, if an event *B* in the experience stands in the temporal relation 'after' to an event *A*, then the 'state of mind' or tonality associated with *B* is happier than that associated with *A*. Again, when I say that God's purpose is 'ultimately' realized I really mean that, *in the analysis* of all monadic experience, the states associated with the corresponding instants or events of the various experiences would necessarily be described as tending towards a limit determined by God's purpose as the instants are taken 'later and later' in the time-series within each monad.

This brings us to the consideration of the ultimate nature of 'progress' and its status in reality. I think we may approach the matter analytically somewhat as follows: Let us call the temporal 'sections' of a monadic experience, as introduced in the ordinary analysis of the latter, the 'phases' of the monad. Then the relation between a phase *A*

and another phase B, where B is 'later' than A in the time-series of the monad, may be said to be characterized by progress if phase B is more in accordance with the purpose of God than phase A; or, in more concrete terms, if phase B is happier than phase A. For reality as a whole, if ΣA and ΣB represent all the individual monadic phases corresponding to A and B respectively, the relation between the reality conditions represented by ΣA and ΣB would be characterized by progress if there were altogether a greater amount of happiness in the phases represented by ΣB than in those represented by ΣA. There are, of course, great difficulties in giving any precise meaning to a quantitative conception of happiness, to which I have referred in Chapter II; but, as I also suggested there, the idea of being more or less happy, whether applied to an individual or to the world as a whole, undoubtedly seems to be significant, even though this significance is difficult to define.

If, as I have suggested, it is true that God's purpose is necessarily realized we must therefore say that, within the unitary experience-structure which constitutes a monad, the order of the phase-elements from 'earlier' to 'later' is, in spite of fluctuations, correlated generally with progress as I have defined it. This will be true of every monad. We must not, however, say that the monad progresses, but rather that progress is an attribute of the unitary experience, regarded as an indivisible concrete whole, which is the monad.

I think we must further postulate that the phases within each and every monad range from complete conflict to complete harmony with God—that is, from complete evil to complete good. This is required by the nature of the monads and their relation to one another and to the supreme monad, God, matters which I have already discussed at some length. But this somewhat drastic conclusion is perhaps mitigated when we remember that 'evil' and 'good' are not really characteristics of the monads in themselves, but rather of the relations between them.

I have suggested earlier that we may regard development within each monad as being from the most rudimentary level of 'mentality' to the highest possible level, and we must regard each monad as an indivisible synthesis or integration of these ordered levels. The latter

correspond to the progress from complete evil to complete good; they are, in fact, the ground of the relations which constitute these. At the lowest levels we have what, in interaction, gives rise in experience at the human level to events from which we construct the concept of 'inanimate' matter. I suggested in Chapter V [1] that we might regard the latter as associated with approximation to complete evil, and this may not appear so odd now that evil has been exhibited as arising from the relations between monads and not from the nature of monads in themselves. At the lowest level we shall have complete negativism relative to the universal purpose. But it is not unreasonable to suppose that the experience of happiness or of its opposite (as distinct from mere pleasure or pain) does not arise until a level is reached—the personal level—at which awareness of co-operation or opposition is possible. Below this level good and evil are not 'moral' concepts, and I therefore do not feel it inappropriate to speak of increasing degrees of evil as we pass down through the lower stages of animate matter (interpreted as arising from monadic interaction) to inanimate matter.

It is, of course, extremely difficult to conceive the synthesis of permanence and change, and of temporality within non-temporal monads, which is implied in all this, though each of us realizes it concretely in his own experience. What seems to be required is a rather new conception of analytical symbolism—namely, the conception of symbols which, though themselves divisible into separate parts, signify entities which are actually indivisible. Thus, suppose S is some particular monad, and ϕ_t is the phase of that monad at a time t measured from an arbitrary origin in the monad's time-series or in a 'public' time-series with which the latter is correlated. The nature of the phase will depend on t and on certain other factors which I will lump together under the symbol R as I am here specially considering the time aspect. Thus, $\phi_t = f(t, R)$ where f is a function of some kind. Then I should not identify S symbolically with the sum of all its phases, *i.e.*, with $\int_{-\infty}^{+\infty} \phi_t dt$, but with the *whole equation* $\phi_t = f(t, R)$. Thus, $S \equiv [\phi_t = f(t, R)]$. I should regard $[\phi_t = f(t, R)]$ as a single divisible symbol representing an entity S which is actually indivisible. More strictly, we ought

[1] See pp. 149 f.

perhaps to regard ϕ_t as described or 'determined' by a number of variables or 'co-ordinates' $q_1, q_2 \ldots q_n$, whose values at time t are given by a set of equations $q_1 = f_1(t)$, $q_2 = f_2(t) \ldots q_n = f_n(t)$. In this case I should identify S symbolically with the whole battery of equations, regarding the latter as a single divisible symbol for S. But the illustration is really metaphorical, for, owing to the uniqueness of a monad, its nature cannot be expressed implicitly in anything analogous to a mathematical function, and in any case the relations between events in an individual experience are of a probability type.

There are many cases of what are, in effect, single divisible symbols for things which are actually inseparable. I will take a simple mathematical illustration. Consider the length and shape of an ellipse. We may deal with these to some extent separately in analysis, but they are not separable actually, for we could not actually have an ellipse characterized by length but not by shape, or vice versa. The ellipse may be represented by the equation $\frac{x^2}{a^2} + \frac{y^2}{a^2(1-e^2)} = 1$, where a fixes the length, being the length of the major or transverse axis, and e, the eccentricity, fixes the shape. I should then consider the whole equation just given as a single symbol representing the ellipse, but in it we can separate a and e from one another, though in the actual ellipse the length and the shape are inseparably synthesized.

We have another kind of example of divisible symbols, which is, I think, analogous in principle to the idea I have been developing, in the 'factorization' of symbols as used in modern Wave-tensor Calculus.[1] In any case it is an interesting and fundamental fact—a fact which alone makes analysis practically valuable—that we can juggle analytically with the parts of divisible symbols, such as I have been considering, so as to produce other divisible symbols which are themselves found capable of interpretation as representing things which are actually indivisible. This happens, for example, every time we make calculations based on abstractions from what is actually experienced so as to describe symbolically the nature of something else which may be experienced.

[1] Cf. Eddington, *Relativity Theory of Protons and Electrons*, p. 37.

There is another important point which is relevant here. It may have been noted that I have implied at one stage in the foregoing a range in the time-variable t within the monad from minus infinity to plus infinity, and it may be asked whether this means that a condition of perfect happiness 'never' occurs in the monad. This by no means follows. The fact that it may be necessary to introduce infinity as a limiting value in the course of symbolic analysis does not imply the non-occurrence of what would correspond to this value in the actual concrete nature of the entity to which the analysis applies. This is especially true in regard to asymptotic approach, which symbolizes something akin to what occurs in the analytical description of progress within the monad towards a condition of perfect happiness. Indeed, in this connexion the occurrence of infinity in the analysis really symbolizes a kind of 'completeness' in the monad somewhat analogous to what Leibniz described metaphorically as a 'mirroring' of the whole Universe from one 'point of view.'

There is one question which may well be asked here. As God is a monad, is not He Himself characterized by the principle of monadic development, so that there are, within His experience, all phases of development from the lowest upward? I rather think that this must be admitted, but it does not affect the argument. For, in view of the peculiar nature of God's relation to the other monads, and the consequent of this in His experience, which I discussed in the last chapter, He would, *relative to the other monads*, be characterized at all levels by the qualities attributed to Him, in forms congruent respectively with those levels. We have, in fact, within every monadic experience (including God's), regarded *sub specie temporis*, a progression from bare existence, as it were, in which all potentialities are implicit, to a full realization of all potentialities at every stage, and not only of those associated with the ultimate goal. This world is not one of many possible worlds, but contains within its structure all that *is* possible. Any difficulty involved here arises only from the deficiencies of analysis in attempting to exhibit serially (and it cannot avoid this) what is actually unitary. It is ultimately meaningless to speak of any real attribute X as characterizing a given monad at such and such a stage or time of its development. X is an attribute of the unitary

indivisible entity which is the monad, and in regard to which the serial concept is but a convenient analytical fiction.

The interpretation of the foregoing, in terms of questions relating to 'immortality' and 'survival,' I have considered through a somewhat different method of approach in Chapter IV, and I do not propose to deal with it further. After some concluding remarks on the question of 'evil' I will proceed to suggest the practical philosophy which seems to me to follow from the theories I have been presenting.

The Problem of Evil

Evil, experienced as pain or misery, falls, broadly speaking, into four types according as it is due to disease, accidental injury, inward personal disharmony, or unsatisfactory personal relations with others. Although it is not always easy to see a rational and intelligible ground for the occurrence of these forms of evil in particular cases, I think that, in general, they follow from the metaphysical theory of reality I am advocating, for in all cases they may be regarded as due to the conflicting activity of the individuals which are the ultimate constituents of reality. I shall therefore only speak of them briefly.

Disease is the result either of conflict between the activities of different organisms—*e.g.*, the germ and the body which it attacks—or of a breakdown in the functional processes within an organism, which may result also in structural breakdown, and which may be due partly to external causes. Disease of the first kind is the opposite of symbiosis [1]—that is, of the many processes apparent in Nature in which the activities of different organisms are interrelated in such a way as to lead to their mutual benefit. But it seems clear that all kinds of disease arise ultimately from faulty adjustment of the relations between individual entities, including those whose interaction with us gives rise to the concepts of organic and inorganic matter, and there seems no reason why, when fuller knowledge, *and wisdom*, is achieved in this respect, disease should occur at all. I do not, of course, include under the heading of 'disease' the natural process of decay in organisms in regard to that part of experience which we call 'bodily life;' but,

[1] Cf. H. Reinheimer, *Symbiosis* (Daniel).

with increased wisdom in living, we may achieve a condition in which the bodily process wanes gradually to its close without the accompaniment of disease in the true sense, an accompaniment which is unhappily now almost invariably present.

As for accident and injury, this is evidently due to the wrong kind of interaction, and the only thing to be said about it is that it is often difficult to see, from observation of occurrence of this kind as a limited part of experience, how such occurrences are compatible with the universal purpose. But understanding might be easier if it were possible for us to grasp the scheme of reality as a whole, in respect of good and evil, a matter to which I shall refer in a moment.

In regard to the other two types of evil, which are 'mental' or 'spiritual' as distinguished from the 'physical' types just discussed, I have already dealt with these, explicitly or implicitly, in some detail in topics previously considered, and I will only recall that they may be considered to arise from conflict between the various activities of the Many, or between these and the activity of God.

But, if we try to contemplate reality as a whole, must the occurrence of evil be regarded as necessary, and can its occurrence be rendered intelligible? Many have held the occurrence of evil to be necessary to the occurrence of good, suggesting that otherwise the universe of spiritual beings would be 'morally' a mere blank and therefore non-existent; for, so the argument runs, specific and determinate existence implies differentiation, and a differentiation which yields good must also yield evil.

Such a theory is analogous to theories of the 'polarity' type, which crop up from time to time in metaphysical speculation. Good and evil would be regarded as analogous to 'positive' and 'negative' magnetism, for example, neither of which can occur in the absence of the other. A monadic experience might then be considered as 'polarized' in respect of good and evil, the concept of 'progress' symbolizing the differentiation of these polarities; but the polarity would be, conventionally speaking, 'temporal,' whereas in the physical analogies it is generally spatial.

Can we interpret a theory of this kind in terms of actual experience? I think perhaps we can. For consider first the idea of perfect happiness.

I suggest that there are good reasons for supposing that, for the achievement of perfect happiness, the experience of unhappiness is necessary. As I said in Chapter II, I cannot see that the latter can possibly be regarded as having any intrinsic value, but it may be instrumental to value—that is, to happiness. For suppose all the other conditions necessary to the perfect happiness of an individual occur. Then, given these conditions, it seems to me that the individual concerned would be happier if to them were added the condition of 'having experienced' unhappiness, than he would be if this condition were absent. In other words, contrast would enhance happiness, so that unhappiness would be a necessary prior condition of *perfect* happiness.

But if this be admitted I think it follows that unhappiness is a necessary condition of happiness at any level. For if all the other necessary conditions occurred for happiness *at about that level*, the occurrence of the prior condition of unhappiness would enhance the happiness. Hence, at every level, happiness is increased by the prior condition of unhappiness, and, in the limit, this seems to lead to the result that the latter is one necessary condition of the former.

I should therefore conclude that since (1) in a unity-in-plurality of subjective beings conflict of activity must occur; (2) the difference between conflict and harmony must be experienced in some way, and we name the contrasting experiences 'unhappiness' and 'happiness' respectively; (3) the occurrence of unhappiness may be necessary to the occurrence of happiness at all levels, and certainly to the occurrence of that perfect happiness which is a necessary consequence of the structure of reality; and (4) the harmony or conflict of interaction, experienced respectively as happiness and unhappiness, are what really constitute, respectively, 'good' and 'evil,' therefore the occurrence of evil in the universe is necessary and not merely contingent.

Metaphysical Theism and Ethical Empiricism

I will now outline briefly the practical philosophy which seems to me to follow from the results of the inquiry carried out in the foregoing pages. That inquiry fell into two parts. The first part consisted

of a discussion of theory of value and the practical basis of ethics to be found in experience. The second part was concerned with the construction of a metaphysic which might help to systematize and render intelligible the concrete experience in which the practical basis of ethics was to be found.

As a result of the first part of the inquiry I came to the conclusion that happiness was the only value in any practically significant sense of that term; while only in actual experience of the kind with which we are all in some degree familiar, though we may not be able to describe it precisely, and which we term 'happiness,' can a practical basis for ethics be found. Moreover, experience provides, not only a practical, but also a sufficient basis for a system of ethical conduct, without appealing to conceptions such as those of God and the moral law which refer to matters which are necessarily hypothetical, and cannot be logically deduced from the facts given in experience. Also, when the idea of 'moral responsibility' is analysed it does not seem possible to attribute any significance to it.

I therefore believe that the nature of human conduct should be determined by what experience has shown, or experiment may show, to be conducive to happiness, remembering that human nature is such that the happiness of each is bound up with the happiness of all, each finding his own happiness largely through seeking to increase the happiness of others, and with the correlative proviso that the search for happiness is not aided, and may be hindered, by an attempt by the individual to keep this object consciously and continually in mind.

It follows that we should seek wisdom rather than 'goodness' as commonly interpreted—that is, the knowledge of how to achieve happiness; though, rightly interpreted, the 'good' man or the 'good' action is, in fact, the wise man or the wise action; and, in reasoning with human beings on matters of conduct, we should speak in terms of the behaviour which, on the basis of experience, seems likely to lead to that happiness, or self-fulfilment and satisfaction, which all really seek, rather than in terms of God or of 'moral' sanctions.

But this alone is not enough for human beings, who crave for some 'explanation' which shall make experience intelligible to them, and for some assurance which shall imbue them with confidence and a

feeling of ultimate security, and, if possible, provide a guarantee that their longings and aspirations shall be realized in the end.

Accordingly the second part of my inquiry was directed towards determining whether this natural human craving could perhaps be satisfied. As a result I developed a metaphysic which there seemed to me to be strong reasons for believing to be true, and which was truly 'explanatory' in that it was expressed in terms of subjective being. Moreover, it involved a theism of a type consonant with the human desire for reliance on an ultimate reality such as would guarantee the final achievement of the happiness of all. Hence the ethical theory and practice which I advocate, though it must and should stand on its own base and is not deducible from, or necessarily leads to, my metaphysical theory through strictly logical reasoning, can be intelligibly and, I think, fairly effectively related to that theory.

I am therefore led in the end to a practical philosophy which is a kind of combination of ethical empiricism or positivism with a metaphysical theism, and which can be made a sound basis for discussion between human beings on matters which are relevant in this connexion, and for ethical and religious development. But this raises the question of the relation of my theories to fundamental Christian beliefs, a question to which I will finally give some consideration.

Christianity

In the first place, I suggest that there is clearly no incompatibility between my theories and the essential articles of the Christian faith. So far as the purely ethical aspect is concerned, I have maintained in Chapter II [1] (and I adhere to the position that I there took up) that Christianity, as expounded by Christ Himself, points to an ultimate goal which is conceived as a highly desirable state for human beings, and whether we call that state 'happiness' or name it by some such term as 'blessedness' is a mere matter of words. Accordingly, I think that my ethical theory is not only consistent with Christianity, but really implicit in it.

On the metaphysical side, the theism I have developed involves

[1] See p. 35.

the idea of a personal God, who both transcends and is immanent in the world of 'finite' beings, and who is omniscient, omnipotent, and ubiquitous in a significant and intelligible sense. Moreover, as the inquiry proceeded, there appeared a metaphysical basis for the experience of what we call 'love,' together with reasons for regarding love as an essential attribute of God. All this seems to correspond closely with the type of theism which is a fundamental constituent of Christian belief.

I do not propose to consider the elements of Christian dogma in detail, especially as these vary a good deal according to the particular individual or the particular sect. But I should, perhaps, make some reference to the two most important doctrines in this connexion—namely, those relating respectively to the Incarnation and the Atonement.

So far as the Incarnation is concerned, the difficulty is to determine what precisely is the form of the Christian doctrine. It is bound up with the doctrine of the Trinity, and Christ—the 'Son'—appears to be conceived as in some sense distinct from God—the 'Father'—while in another sense the two are identical. I think the most I can say is that it seems possible to put the doctrine in a form which is compatible with my metaphysical theory and also with general Christian belief. For, in so far as God is immanent in all monads, He would be immanent in Christ, who, in His bodily life, was a personality at a far higher level of development than are ordinary human beings. In view of this high level of development Christ would share in the knowledge and power of God to a far greater extent than is the case with ordinary human beings. There is nothing in this incompatible with my theory, which does not require that a given monad should be associated as a 'dominant' monad with an organized group of 'subordinate' monads, as body, at any particular stage of development. Moreover, as God is immanent in all monads, the metaphor of 'sons of God' may be applied to all, as Christ Himself pointed out. On the other hand, as transcendent, God is distinct from Christ as from all monads. The immanence of God in a very highly developed personality would result in an exceptional manifestation of His nature through that personality, and this is in accordance with Christian belief.

From the many different, and rather confused, theories of the Atonement, three ideas seem to emerge fairly clearly—namely, those of vicarious suffering, vicarious 'repentance,' and restored or increased 'communion' of men with God. I suggest that these can be interpreted as implying that, by the circumstances of Christ's life and death, the burden of suffering which the world must endure, in its progress towards universal happiness, was reduced, the comprehension of the way of life necessary to the fulfilment of God's purpose (and therefore to happiness) was increased, and the activity of human beings ultimately brought into a greater degree of consonance with God's activity. I do not think it is possible to say definitely whether or not Christ's life on earth led to results of this kind which would otherwise have been absent or greatly delayed—that is, a matter of faith; but the interpretation I have suggested seems to be quite compatible with my metaphysic. For, owing to the unity of the world and the consequent interrelatedness of all monads, the activity of Christ would have a direct and universal influence, especially in view of His lofty personality, as well as an indirect influence through objective knowledge of His life.

I therefore believe that, although my theory does not necessarily require the occurrence of all the events which are the basis of the Christian faith, it is quite compatible with them; and with this conclusion I will proceed to summarize the results of this chapter.

Summary

In this chapter I have tried to show that the metaphysical theory which I have developed is such as might reasonably be accepted as an account of the ultimate ground of what we actually experience, and as rendering that experience intelligible.

Taking subjective existence as the essential type of substantial being, I pointed out that experience is organized in unitary individual structures—an ultimate fact which must be accepted. Whatever form of words we may use to describe them, these structures are actual entities or subjects, acting in specific ways, which are partly determined by their interaction with others, the particular nature of the

activity, as regards its form and content, constituting what, in analysis, we regard as the 'object of experience' and the relation of the subject thereto.

I adopted the Leibnizian term 'monads' as a name for these unitary experience-structures, though in my theory the monads interact and are not independent in the sense postulated by Leibniz. Reality is, then, a plurality of interacting monads, the supreme monad, God, being immanent in the plurality and at the same time transcending it. In this we have the ground of the patent organic unity of the world.

The monads being unique, and partially free and independent individuals, their activities would result in events in experience such that from the occurrence of any given event or group of events it would not be possible to deduce with certainty the occurrence of any other specified event. The relation between the events in experience would, in fact, be of a probability type. The general nature of these probability relations would be determined by logical principles and would not be a special characteristic of a particular universe, though the various values of the variables involved would be determined by the nature of the universe.

I had followed up this point in some detail, so far as the 'physical' field of experience was concerned, in Chapter III, where I tried to show that the simplest assumptions regarding the probability function involved were sufficient to enable us to deduce all the main general results of mathematical physics, the abstract spatio-temporal framework employed in the latter turning out to be really equivalent to a representation of the field of the probability values of events. The relatively narrow range of a set of these values about their maximum, in the physical field, may be regarded as due to the fact that we are here dealing with events grounded in the activity of mass assemblages of monads at the most rudimentary level of development, a level which will be characterized by a considerable degree of routine uniformity in activity. But there is a general tendency for monads to develop from the lower to the higher levels, and so from routine response to increasing spontaniety, a fact which I held to be reflected in our own experience by events of the kind from which we have constructed the Second Law of Thermodynamics and the Principle of the

Expanding Universe. The latter may therefore imply, in the result, a progressive 'decay' of the 'material' Universe, but, at the same time, a progressive development of the 'mental' or 'spiritual' Universe. Ultimately, therefore, reality might be a universe of interacting monads at a very high level of development, including personality as a main characteristic, in which experience would be in the nature of pure imagination and intellection together with a creative rapport between personal beings operating so as to produce, in the experience of each, harmonious patterns which are enjoyed for their own sake.

In the wider field, the various activities of the partially self-determined monads would result *a priori* in conflict which gradually yielded to harmony under the steady directive influence of the activity of God, the supreme immanent monad. The conflict and harmony would be experienced, respectively, as misery and happiness, and it is here that we have the ground of the occurrence of what we call 'evil' and 'good'; and I suggested that the reasons given in the last chapter for believing that God's purposes are necessarily realized—a condition which would be experienced as universal perfect happiness—might imply that the process which consists in a steady monadic development from the 'inorganic' to the 'organic,' and thence through the various levels of 'consciousness' to the highest developments of personality, and which gives rise in experience to events of the kind from which we construct the concept of 'evolution,' is a necessary process.

At this point I gave a final summary of my theory of the nature of experience, emphasizing the fact that the unitary experience-structures, or monads, are, in the concrete, indivisible unities in no sense separable into collections of parts, though for conceptual purposes they are analysed in various ways. But it should be remembered that the analysis necessarily introduces an element of artificiality which must be discounted in any final interpretation. I remarked that, although I had sometimes spoken of experience as a 'manifestation' of activity, I really regarded experience as activity itself.

I then went on to consider the psychoanalytic theory of Freud and his associates and successors, and the concept of the unconscious, pointing out that these could not properly be made the basis of a metaphysic. I also drew attention to certain ambiguities and contra-

dictions in the terminology of the psychoanalysts. The two main types of unconscious determinants of behaviour are the innate fundamental drives which influence the individual from the beginning, and the factors which have been conscious, but, owing to a 'repression' which is itself unconscious, have become unconscious, though they continue to influence behaviour.

In the result, the implications of psychoanalytic theory which are at all relevant to metaphysics seem to amount to the fact that, although idea and associated action are often closely related temporally, this is not necessarily the case, specific ideation producing a tendency in the subject to act as if influenced by this ideation although the idea which is its form is no longer conscious; while the unconscious primal urges can be interpreted as attributes of the essential nature of the subject. In both cases the 'unconsciousness' is really due to the fact that the subject cannot be the object of its own cognition.

I then began a last consideration of the status of 'time' in reality by emphasizing once more the concrete indivisibility of the monads, a fact to be remembered in connexion with the so-called 'temporal cross-sections' of experience as well as with the spatial cross-sections. Temporality is a characteristic of certain relationships within the structure of a monadic experience; it does not characterize the structure of the whole reality, as analytically described, of which the monads are the unitary constituents.

I next went on to discuss 'progress' analytically in terms of monadic 'phases,' or 'temporal cross-sections.' Progress connotes a development of monadic phase from less to greater happiness, according as monadic activity in the phase is less or more in harmony with God's activity. A range of phases within each monad from complete conflict to complete harmony with God was postulated, remembering that the derived 'evil' and 'good' were not characteristics of the monads themselves, but of their interrelations. This range of phases would be identical with monadic development from the lowest to the highest level of 'mentality.'

In order to mitigate the difficulty of conceiving the synthesis of permanence and change (realized by each of us in his own experience) which is implied in my metaphysic, I suggested a somewhat new con-

ception of analytical symbolism—namely, that of divisible symbols signifying indivisible entities. I applied this to the case of the monads, and also illustrated it by certain examples from mathematics. It seems clear that divisibility of a symbol into separate parts does not necessarily imply that the concrete reality for which the symbol stands is also divisible into separate parts.

I then considered the various types of evil and showed that their occurrence followed from the nature of the reality postulated in the metaphysical theory I had developed. I further suggested reasons for holding that the occurrence of evil in the Universe was necessary and not merely contingent; and it appeared in the course of the discussion that a theory of good and evil of the 'polarity' type could be interpreted in terms of actual experience.

Finally, I gave reasons for considering that the results of the whole inquiry led to a practical philosophy which was a kind of combination of metaphysical theism and ethical empiricism. It seemed to me that this philosophy might form a sound basis for a way of living, and, as a matter of particular interest, I tried to show that it was not incompatible with the main tenets of the Christian faith, and, indeed, might be held to imply some of the most important of these.

Conclusion

I realize that in the course of this book I have from time to time wandered far from the path of pure logic into the ways of imagination and speculation. This has been quite deliberate, and though some may regard such methods of philosophizing as out of date, I do not apologize for them. For I cannot bring myself to accept the dictum of those writers who maintain that philosophy should concern itself only with the piecemeal investigation of experience and the derivation therefrom of results which, though limited, are certainly true. I think more is asked, and rightly asked, from philosophy than this. The work of the most famous philosophers of the past was characterized by speculative metaphysics on the grand scale, and I feel that this was an attempt to satisfy, not only the creative impulses of the philosophers themselves, but a common need of human nature. It is now generally realized that

the logical deduction of ultimate truth from immediately given facts is not possible. But there seems no diminution in the demand for a system of beliefs which, though it may not be rigorously deducible from the given, is fundamentally based upon, and suggested by, the latter, capable of being interpreted in terms of facts which are experienced by all, and able to render more intelligible the difficulties and suffering which play such a large part in human experience at its present level.

This book is an attempt to make a modest contribution towards the framing of a system of beliefs which shall satisfy these conditions. In actual fact, "John Smith" is primarily interested in the nature and destiny of the monadic unit which is associated with that name, and, provided some light can be thrown upon this, he does not much care how his particular microcosm is described. It does not matter if he is called just a bundle of thoughts, sensations, and desires, if it is the right sort of bundle, now and hereafter. For him, the ultimate end and justification of existence can only be existence for its own sake—that is, a state of being which is intrinsically and completely satisfying.

I should not presume to claim that I have succeeded in giving more than a fragmentary answer to the insistent questions which trouble most people, nor in throwing more than a glimmer of light (if any light at all) upon the dark places. But I confess that I personally find the system of beliefs I have outlined to be generally satisfying; and, beyond this, there is in metaphysical speculation, as in some aspects of mathematics, an attraction and an appeal—possibly æsthetic in character—which goes beyond the purely rational.

I will close with some reflections of a general character. A formal condition of existence is difference—undifferentiated being is nothing—and difference is a sufficient, and not only a necessary, condition of existence, implying unity as well. Yet there is no sufficient reason why differences should exhibit any particular degree of co-ordination to the exclusion of other degrees. Hence reality will include all degrees of the co-ordination, or lack of co-ordination, of differences. These differences will comprise all possibilities, and the order of their degrees of co-ordination is the formal basis of what, in experience, gives rise to such concepts as those of time and progress. The distinction between

the possible and the necessary arises only in considering, in analytical abstraction, the 'parts' of reality and their interrelations. But in the whole unity of concrete reality this distinction is resolved—all that is possible is, and is necessary. We cannot know all the possible, nor is the whole of reality deducible (even theoretically) from any part of it yielded by analytic abstraction. The inherent limitations of analysis are such that, from a part so abstracted, there could only be deduced the *probability* that the 'remainder' was of a certain specific nature. The whole is not deducible from any data less than the whole, and only from an immediate intuition of the whole reality could there be awareness that it could not be other than it is.

APPENDIX

Causality, Time, and Probability[1]

THE TRADITIONAL 'LAW OF CAUSALITY' RUNS, IN EFFECT, ROUGHLY somewhat as follows: Given the occurrence of certain events, there are discoverable principles which enable us to deduce the occurrence of certain other events.

I suggest the substitution for this of a causality law based on probability principles.

We may first define a 'state' as something which may occur to an 'observer' as an event. An event is thus the occurrence of a state. It is really redundant to speak of the occurrence of an event, for an event is, by definition, something which occurs.

For the purposes of my theory I regard an event as the content of an observer's specious present (that is, the whole field which is compresent to him), and not as some part of that content. I call the latter a 'partial' event.

The probability causal law which I suggest asserts, in effect, that, given the occurrence of certain states as events, there are principles which enable us to deduce the *probability* of occurrence, as events, of certain other states.

Theoretically it might ultimately be possible to discover principles enabling the probability of any specified event to be deduced given any particular event or, perhaps, minimum group of events.

While the probability causal law is meant to apply to all fields of experience, I illustrate it, and investigate its consequence, with special reference to the physical field. A physical event is, in most contexts, the whole content of the *visual* sensory field of an observer's specious present. In what follows the reference is in all cases to the physical field, unless stated to the contrary.

[1] It is suggested that the reader should first glance at the brief summary at the end of this Appendix.

I assume that the continuum of states is necessarily fourfold, so that to identify a state four indices are needed. One of these indices (which I will call n) differs in character from the others, for it determines the *order* in which states which occur are perceived by a given observer as events; or the order in which states which do not occur reach, and then recede from, their maximum probability of occurrence. States which do not occur are said to 'pass' as they go through the phase of maximum probability.

The order of events, denoted by the values of n, has a 'sense,' just as, for example, the series of real numbers has a sense in respect of increasing magnitude, and the events of the order are considered ultimately to co-exist just as the terms of the series of real numbers co-exist.

The simplest hypothesis as to the way in which the probabilities of occurrence to a given observer are distributed among the states, and the one which makes the minimum necessary assumptions, is that these probabilities are themselves distributed at random about their maximum values, in a manner associated with the well-known distribution curve, which is variously termed the curve of 'chance' or 'probability' or 'normal distribution.' Again, the simplest form of this distribution is given by an exponential function involving two variables, which I will call s and k, and which may be written mathematically in the form e^{-ks}, where s takes positive values only. When a state occurs its probability of occurrence evidently becomes unity. The probability function $p = e^{-ks}$ takes this value when s is zero. Evidently, then, s is some kind of a measure of 'separation' from the observer, and, if this separation is reduced to nothing, the state occurs to the observer as an event.

It appears reasonable to assume, therefore, that s will be a function of the indices which identify the state together with some variable which is independent of the particular state and therefore of the indices which identify it. I in fact assume that s is a function of the three indices (ξ, η, ζ) other than n, the index of order of occurrence or 'passage,' and another independent variable which I indicate by τ. Given a state identified by certain values of the three indices, the field of the probabilities of occurrence of this state is the field of the values

of τ. I therefore call the variable τ 'true time,' suggesting that we should regard the 'past' and the 'future' of an event or 'present,' not as certain other events or 'presents,' but as the field of the probabilities that the given event 'will happen' or 'has happened'—that is, the field of τ.

To the question whether any meaning can be given to the idea of unperceived events (in particular sense-events) I should therefore now reply that so-called 'unperceived events' correspond to what I call 'states,' and are, in fact, probabilities of being perceived.

It is at this point that we can relate the theory I am presenting to the basic theories of physics. The relation is made apparent by the fact that the logarithm of my probability function $p=e^{-ks}$, or, more generally, $p=e^{-\int k ds}$ turns out to correspond closely to 'action,' one of the most fundamental concepts of physics, the variable s corresponding to what is called 'interval,' the values of which give invariant relations between the elements of physical space-time, while the variable k corresponds to the gauge-factor or unit of measurement at different points in the continuum of space-time.

In physics, the interval s for any small region of space-time can be expressed in terms of the space co-ordinates x, y, z, and the time co-ordinate t, for any chosen frame of reference, the general nature of the functional relation between s and the co-ordinates x, y, z, t, being regarded as determined by the nature of the space-time continuum in the region in question. The three space co-ordinates x, y, z then correspond to the three indices which, in my theory, identify a state. But a significant point arises here. The time-variable t of physics is found to correspond, *not* to my 'true time' variable τ, but to n, my index of order of occurrence or passage.

From all this I conclude that the space-time of physics is in no sense a real existent entity, but is a convenient way of conceiving, and of representing diagrammatically, the field of the probabilities of the occurrence of states—*i.e.*, of events.

The τ, ξ, η, ζ continuum, like the t, x, y z space-time continuum, can be theoretically represented by a spatial diagram, though the latter cannot actually be drawn, as four or (if the relations between the two continua are shown on the same diagram) five dimensions are involved.

The axes of ξ, η, ζ will lie respectively along the axes of x, y, z; but the axis of τ will be perpendicular to the axis of t as well as to the axes of ξ, η, ζ, and therefore of x, y, z. The t, x, y, z diagram can be transformed into the τ, ξ, η, ζ diagram by simple mathematical relations such that to every point in the former there corresponds a point in the latter.

The details of the correspondence are interesting. In what I will for brevity call the t-diagram, the tracks of light pulses are represented by certain lines passing through O, the point which represents the observer. But these lines transform into the single point O in the τ-diagram. Thus, in the latter, everything that is 'seen now' by the observer is represented as being 'at' O. There is clearly some logic in this. For when, for example, we say that we see the moon, what we really mean is that there is in our visual field a certain small, round, whitish patch, and this is part of an event *which is actually occurring to us*. It must be distinguished from what, for example, is another event (if there is a suitable observer) at a certain interval—namely, 'seeing the moon from the moon's surface.' In the τ diagram this second (possible) event would be represented by a point at a certain distance from O, but the first event, which is what the observer is actually perceiving, would be represented 'at' O.

The whole of the real portion of my τ-diagram represents all the states which can possibly occur as events to the observer represented by the point O. Points representing states which cannot possibly occur are located in the 'imaginary' portion of the diagram. On the other hand, in the t-diagram of physics, possible events for the observer at O are represented by points on one side of the lines representing the tracks of light pulses, the region thus defined being called the 'absolute past' and the 'absolute future,' while impossible events are represented by points on the other side of these lines, the region thus defined being called 'elsewhere.' Intervals from O in the former region are called 'time-like,' and those in the latter region are called 'space-like.'

It is interesting to note that, just as the minimum number of variables to determine my probability function is two—namely, s and k—so the minimum number of variables which the physicist

requires to determine a space-time continuum is two—namely, interval and gauge-factor. Moreover, the relations of the two latter to such co-ordinate or mesh-system as may be chosen, give the metric, and are related respectively to what we call the gravitational and electro-magnetic fields. By virtue of the correspondence already noted it is clear that these fields can be interpreted in terms of my probability system.

What I have written so far illustrates briefly and generally the way in which the basic ideas of special and general relativity theory in physics can be interpreted in terms of my theory. But whereas in physical theory the observer tends to be conceived as 'travelling' along a 'world-track' in the space-time continuum and 'coming across' events, I conceive him as a non-spatio-temporal entity represented by a point O in a field of changing probability values of states, and the changes can be conceived, not in terms of movements of O, but as (purely diagrammatic) movements of points in the τ diagram along tracks representing states. If a track passes through O the state occurs to the observer as an event. Moreover, while in physics the time-axis is tangential to the world-track of the observer, and may rotate (and with it the space-axes) with the movements of the latter, so that there is no absolute time-direction in the spatio-temporal continuum, in my system the τ axis remains fixed in direction (at any rate when a small region is being considered) though the axes of ξ, η, ζ rotate with those of x, y, z. This marks an absolute distinction between τ and ξ, η, ζ.

The fields of different observers are correlated in my theory in a way exactly analogous to the way in which they are correlated in physical theory, and I will not pursue this point here.

The relation of the probability theory to 'microscopic' physics has two aspects. In the first place, adopting the position that the material bodies of physics can be shown by analysis to consist actually of relations between groups of events or (as I should say) groups of states, consideration of the probability function shows that a material particle must be considered as being associated, not with a fixed position in space, but with a distribution of probabilities of its being in various spatial positions. This is in line with modern physics.

Secondly, it appears that the nature of the probability function must be modified for points near to O. For the values of the probability function are continuous, whereas there is no continuity between non-being and being, but an absolute dichotomy. Hence, in approaching the value unity, the last stage must consist in a sudden jump, so that ks tends to a limiting small value, which I call h, near O, and then jumps to the value zero at O, the probability function therefore tending to the limit e^{-h} near O, and then jumping to the value 1 at O. We find in physics something which corresponds exactly to this—namely, the fact that action is observed to be actually absorbed or omitted only in definite small, but non-infinitesimal amounts, which are always the same, or integral multiples of the same, amount which is known as the 'quantum' of action. I therefore conclude that the appearance of the quantum in the analysis of observed physical phenomena is an expression of the absolute dichotomy between being and non-being.

If we assume that there is a universal steady decrease of probability with time (and I suggest a 'metaphysical' reason for this in Chapter VII) it can, I think, be shown that this appears in the ordinary analysis of physical phenomena under two aspects—namely, in the principle of Maximum Entropy (embodied in the second law of Thermodynamics) and in the spatial expansion of the Universe. In connexion with the latter it may be noted that the results of physical analysis require the assumption that space, or any spatial section of the space-time continuum, has a small 'natural' curvature and is re-entrant. Thus space is unbounded but finite, like the surface of a sphere. I think that this can perhaps be related to the fact that the probability function is periodic in the conventional space-variables x, y, z, though not in the conventional time-variable t. Hence the probability values continually repeat themselves in the spatial sections of the t-diagram for any given value of t. In other words, though time may go on and on, space goes round and round.

The transition from microscopic to macroscopic phenomena is effected through considerations arising from the statistics of very large assemblages of very small particles, and it can easily be shown that although the probabilities involved in the case of microscopic

bodies may range from very high to very low, those involved in macroscopic bodies will all be very high, closely approaching the value unity, which is associated with certainty. This is why it is possible to predict the movements of macroscopic bodies accurately.

Certain philosophical results follow from the theory I have outlined. For example, the relations between events, or, rather, between states, are seen to be different in kind from the relations *within* events. In particular, spatiality is found only within events; the relations *between* events or states are not spatial but of a probability type. It is only with the latter that physics actually deals. As for the conventional idea of time, this seems to derive from the fact that the events in the field of an observer are ordered, the order having a 'sense'; and I suggest that the so-called 'duration' of events is nothing but the *existence* of events. The time of physics and 'common sense' is a fiction, convenient for analysis, and when, in physical equations, we multiply anything by time we are merely endowing it conceptually with existence. It is significant that action, the fundamental 'stuff' of the physical world, is equivalent to energy multiplied by time. A quantum of action does not exist for a certain time—it just exists. It is not 'in' time—time is in it.

I have already suggested that a so-called 'unperceived event' is really nothing but a probability of being perceived. Similarly, the distinction between Becoming and Being may be regarded as really consisting in the distinction between probability and certainty, the process of Becoming being conceived as the increasing probability values of a state which may occur as an event.

Finally, it should be pointed out that the original assumption of a *four*-fold order for the continuum of physical states is not a merely arbitrary assumption. There are sound epistemological reasons for believing that the continuum with which physics deals must necessarily be ordered by our minds in this way.

Summary

1. The conditions determining the analysis of observational knowledge make it necessary to substitute for the traditional 'law' of causality a principle of relationships between the *probabilities* of events.

2. A 'state' is a possible event—that is, something having a probability of occurring to a given observer as an event.

3. In the field of physics a state is identified by four index numbers.

4. From the relationships of these index numbers with one another and with certain variables whose values express the relations of states to one another, developed from an appropriate probability function, it is possible to deduce results showing general consonance with the results of physical science.

5. It is therefore suggested that the space-time of physics is simply a convenient way of conceiving, and of representing diagrammatically, the interrelated probability values of states, *i.e.*, possible events. 'Observers' are not spatio-temporal entities.

6. There emerges the concept of a 'true time' (distinct from conventional time) in which the 'past' and the 'future' of a given event are not other events, but the field of the probability values of the event in question.

7. The theory perhaps helps to resolve certain philosophical difficulties in connexion with such questions as the status of 'unperceived events' (especially sense-events) and the distinction between Becoming and Being.

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